

**FINAL
PROGRAMMATIC ENVIRONMENTAL
ASSESSMENT
FOR THE
CONSTRUCTION, MAINTENANCE AND
DEMOLITION
OF
COMMUNICATIONS, WIND, WATER, AND
CAMERA TOWERS
AT THE
45th SPACE WING, FLORIDA**



OCTOBER 2005

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FINDING OF NO SIGNIFICANT IMPACT AND

FINDING OF NO PRACTICABLE ALTERNATIVE

CONSTRUCTION, MAINTENANCE AND DEMOLITION OF COMMUNICATIONS, WIND, WATER AND CAMERA TOWERS AT 45TH SPACE WING, FLORIDA

OCTOBER 2005

Pursuant to the Council on Environmental Quality regulations, the provisions of the *National Environmental Policy Act of 1969* (40 CFR Parts 1500-1508) and Air Force Instruction (AFI) 32-7061, *Environmental Impact Analysis Process* (32 CFR Part 989), the United States Air Force (USAF) conducted a Programmatic Environmental Assessment (PEA), hereby incorporated by reference, of the potential environmental consequences associated with the construction, maintenance and demolition of communications, wind, water and camera towers used by the 45th Space Wing (45 SW) at Cape Canaveral Air Force Station (CCAFS), Patrick Air Force Base (PAFB), Malabar Transmitter Annex (MTA) and Jonathan Dickinson Missile Tracking Annex (JDMTA), all of which are located along or near the eastern coast of Florida. This PEA will serve to maximize efficiencies of time, effort and cost, by accomplishing the required environmental review and approval of these recurring activities in one document.

Environmental Consequences and Benefits

No significant environmental impacts were identified that would require the completion of an Environmental Impact Statement. However, some less than significant and beneficial impacts were identified and are summarized below.

Air Quality: Short-term impacts associated with construction-related emissions would be expected. Most construction-related emissions are exempt from regulatory review provided that National Ambient Air Quality Standards (NAAQS) would not be exceeded. Except for dust, emission of criteria pollutants by project-related vehicles and equipment during the construction period would be minor. During installation, ground surface disturbance would occur. Dust suppression techniques would be used as necessary to mitigate wind and water erosion and reduce airborne emissions. Decommissioned towers would be dismantled and removed creating minor, short-term emissions. Changes in local air quality resulting from these sources would not be significant. Due to the relatively small footprint of the towers and the short time necessary for the construction and/or demolition of towers, cumulative impacts would not be significant.

Biological Resources: Potential insignificant impacts may occur to migratory birds. The lights on the towers may attract some migratory birds that could result in death if a collision with the tower and/or guy wires occurs. The USFWS guidelines would be followed to minimize impacts to migratory birds. Land clearing activities at tower sites would be in accordance with the 45 SW Land Clearing Policy and no significant impacts are anticipated from this type of activity.

EO 11990 directs that each agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for (1) acquiring, managing and disposing of Federal lands and facilities; and (2) providing Federally undertaken, financed, or assisted construction and improvements. Wetlands will be avoided when selecting prospective sites for new tower construction, when feasible. However, if, due to mission requirements, avoidance were not feasible, the tower activity would have to be approved on a case-by-case basis. Impacts to wetlands can be reduced to an insignificant level by minimizing the affected area and performing mitigation measures identified during the USACE Clean Water Act (CWA) Section 404 permit process and Florida's Environmental Resource Permit (ERP) process. No significant impacts are anticipated to wetlands.

The potential does exist for protected species to occur on proposed or existing tower sites. Measures would be taken to ensure the protection of these species, including the removal and relocation of Osprey nests on towers. No significant impact is expected.

Geology, Soil and Water Resources: Land disturbance activities have the potential to accelerate erosion. Prior to and during such activities, erosion and sediment control measures would be designed and implemented to retain sediment on-site and prevent violations of State and Federal water quality standards. Any erosion or shoaling that could cause adverse impacts to water resources would be mitigated by implementing Best Management Practices.

Hazardous Materials and Hazardous Waste: Heavy metal based paint may be encountered on existing towers and polychlorinated biphenyls may be found in the paint, transformers or light ballasts of older towers. Most towers contain electronic components, hardware and subassemblies and generate little, if any, hazardous waste. Upon decommissioning, the towers would be dismantled and turned into the Defense Reutilization and Marketing Office for disposal. Some of the components may need to be treated as hazardous waste. No significant impacts are anticipated from the hazardous materials and hazardous waste potentially encountered.

Due to the use of pure copper cables as grounding conductors, it is possible that some of the copper may have corroded during the years since its installation. Coordination with the 45 SW Installation Restoration Program would be required to determine if any contamination is present at tower sites.

Health and Safety: Heavy metal based paint is known to exist on most of the current towers and asbestos may be encountered on rooftops that host antennae or buildings that provide a power supply to towers. All identified asbestos containing material that is removed must be disposed of in an approved landfill. Only licensed asbestos contractors may remove ACM.

Also, common safety hazards associated with tower construction, maintenance and decommissioning activities would exist. However, no significant impacts are anticipated to occur.

Land Use, Zoning and Air Use Compatibility: The Proposed Action would be consistent with the Coastal Zone Management Plan and would follow the guidelines provided by the FAA for lighting and painting. No significant impact is expected to occur.

Cumulative Impacts

Cumulative impacts were considered for the proposed action and no action alternatives. Cumulative impacts could occur to migratory birds from collisions with the towers and/or guy wires. However, the U.S. Fish and Wildlife guidelines would be implemented to minimize impacts to migratory birds.

Conclusion

The PEA and Draft FONSI were made available to the affected public for a 30-day public comment period beginning 17 September 2005. The affected public was notified by advertisements placed in the Brevard and Martin Counties newspapers. The EA and FONSI were also made available by placing on file in the town library of Cape Canaveral and 45SW Public Affairs Office. No comments were received.

The Draft PEA and FONSI were sent to the State Clearinghouse for review by the Florida Department of Environmental Protection, Florida Fish and Wildlife Conservation Commission, Florida Department of State, East Central Florida Regional Planning Council, Treasure Coast Regional Planning Council, South Florida Water Management District and St. John's River Water Management District. Copies of all comments received are located in the PEA.

Finding of No Practicable Alternative (FONPA) for Activities in Floodplains and Wetlands

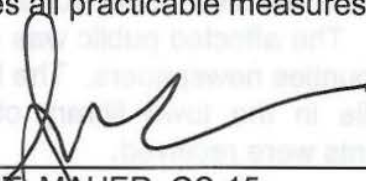
EO 11990 directs that each agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for (1) acquiring, managing and disposing of Federal lands and facilities; and (2) providing Federally undertaken, financed, or assisted construction and improvements. The proposed action would have unavoidable impacts to wetlands because selective trimming and removal of vegetation in surface waters and adjacent floodplains, including wetlands, would be required to satisfy essential mission requirements such as maintenance and/or demolition of towers located in wetlands. However, any new construction of towers within a wetland or floodplain would require site specific NEPA documentation in addition to a FONPA, if warranted.

Finding of No Significant Impact

Based on the attached EA, conducted in accordance with the Council on Environmental Quality Regulations implementing the National Environmental Policy Act of 1969 (Public Law 91-190, 42 U.S.C. §§4321-4347), as amended and 32 CFR 989, 15 Jul 1999 and amended 28 Mar 2001, an assessment of the identified environmental effects has been prepared for the proposed construction, maintenance and demolition of communications, wind, water and camera towers at 45th Space Wing, Florida. I find that the action will have no significant impact on the quality of the human environment; thus, an Environmental Impact Statement is not warranted.

Finding of No Practicable Alternative

Pursuant to Executive Orders 11990 and 11988, the authority delegated by SAFO 780-1 and 32 CFR Part 989 and taking the submitted information into account, I find that there is no practicable alternative to this action that would avoid wetlands and floodplains during maintenance and/or demolition activities and the proposed action includes all practicable measures to minimize harm to the environment.



GARY T. MAHER, GS-15
Acting Command Civil Engineer



Date

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Appendix B: Agency Consultation Letters

Acronyms and Abbreviations

AEI	Air Emissions Inventory
AFI	Air Force Instruction
BMPs	Best Management Practices
BO	Biological Opinion
CAA	Clean Air Act
CCAFS	Cape Canaveral Air Force Station
CEQ	Council on Environmental Quality
45CES/CEVP	45 Civil Engineering Squadron, Environmental Flight, Conservation, and Planning Element
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dB	decibel
dBA	“A-weighted” logarithmic scale
DoD	Department of Defense
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EO	Executive Order
EPA	Environmental Protection Agency
ER	Eastern Range
ERP	Environmental Resource Permit
ESA	Endangered Species Act
FAAQS	Florida Ambient Air Quality Standards
FAA	Federal Aviation Administration
FAC	Florida Administrative Code
FCC	Federal Communications Commission
FCREPA	Florida Committee on Rare and Endangered Plants and Animals
FETSA	Florida Endangered and Threatened Species Act
FDACS	Florida Department of Agriculture and Consumer Services
FDEP	Florida Department of Environmental Protection
FNAI	Florida Natural Areas Inventory
FONPA	Finding of No Practicable Alternative

FONSI	Finding of No Significant Impact
FWCC	Florida Fish and Wildlife Conservation Commission
HRT	Hurricane Recovery Team
HQ AFSPC/CEVP	Headquarters Air Force Space Command/Civil Engineering
HQ USAF/CEV	Headquarters United States Air Force/Civil Engineering
INRMP	Integrated Natural Resources Management Plan
IRP	Installation Restoration Program
J-BOSC	Joint-Base Operations Support Contract
JDMTA	Jonathan Dickinson Missile Tracking Annex
JDSP	Jonathan Dickinson State Park
KSC	Kennedy Space Center
LC	Launch Complex
LDN	Day-Night Average Sound Level
LOCC	Launch Operations Control Center
MBTA	Migratory Bird Treaty Act
MINWR	Merritt Island National Wildlife Refuge
MSL	mean sea level
MTA	Malabar Transmitter Annex
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NEPA	National Environmental Policy Act
NFA	No Further Action
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NOx	Nitrogen Oxides
NOTU	Naval Ordnance Test Unit
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration
PAFB	Patrick Air Force Base
PE	Professional Engineer
PEA	Programmatic Environmental Assessment
PM	Particulate Matter
RCRA	Resource Conservation and Recovery Act
SFWMD	South Florida Water Management District
SGS	Space Gateway Support

SHPO	State Historic Preservation Office
SI	Site Investigation
SJRWMD	Saint John's River Water Management District
SLC	Space Launch Complex
SOx	Sulfur Oxides
45 SW	45 th Space Wing
T&E	Threatened and Endangered
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USFWS	United States Fish and Wildlife Service
USN	United States Navy

1.0 PURPOSE AND NEED FOR ACTION

This Programmatic Environmental Assessment (PEA) has been prepared in accordance with the requirements of the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations, Title 32 of the Code of Federal Regulations (CFR) Part 989, *Environmental Impact Analysis Process*, and Department of Defense (DoD) Directive 6050. The PEA evaluates the potential environmental consequences associated with the construction, maintenance, and demolition of communications, wind, water, and camera towers used by the 45th Space Wing (45 SW) at Cape Canaveral Air Force Station (CCAFS), Patrick Air Force Base (PAFB), Malabar Transmitter Annex (MTA), and Jonathan Dickinson Missile Tracking Annex (JDMTA), all of which are located along or near the eastern coast of Florida (Figure 1-1).

Chapter 1.0 of this PEA provides background information on CCAFS, PAFB, MTA, and JDMTA; describes the purpose of and need for the Proposed Action; provides the scope of the PEA; and presents a summary of potential regulatory requirements that apply to the Proposed Action. A description of the Proposed Action and the No Action Alternative is provided in Chapter 2.0. Chapter 3.0 describes the existing conditions of specified environmental resources that could be affected by implementation of the Proposed Action. Chapter 4.0 addresses how those resources would be affected by implementation of the Proposed Action.

1.1 Background

For the purposes of this PEA, towers are defined as framework structures greater than twenty feet in height and made of metal lattice or of metal or concrete poles. The lattice/poles are used to support aerial equipment such as receivers, antennas, and lightning mitigation rods. Elevated water towers are considered towers while wooden poles are not considered towers. Examples of towers are identified in Figures 1-2 through 1-5.

Towers are grouped according to three types or classes: self-supporting scaffolding towers, guyed scaffolding towers, and monopole towers. Towers include antennas and/or sensors that are located on building rooftops.

- Self-supporting towers are free-standing towers requiring no guy wires or support structures aside from the tower itself. This type of tower usually tapers in toward the top from a larger base and heavier foundation. The base is generally either square or triangular in shape.
- Guyed towers are towers that receive their structural stability through the use of guy wires attached to ground anchors. If a guy wire is missing, broken, or has inaccurate tension, the tower may begin to lean and fall out of plumb.
- Monopoles are single member, self-supporting structures requiring no guy wires, which are usually of a tapered design. These towers are usually constructed of steel or concrete.

All three classes of towers are found throughout CCAFS, PAFB, MTA, and JDMTA.



Figure 1-1 45th Space Wing Mainland Assets



Figure 1-2: Example Water Tower



Figure 1-3: Example Camera Tower



Figure 1-4: Example Communication Tower



Figure 1-5: Example Wind Tower

1.1.1 Cape Canaveral Air Force Station

Located on the easternmost coast of the Canaveral Peninsula approximately 20 miles north of PAFB, the Canaveral Peninsula is a barrier island located approximately 155 miles south of Jacksonville, 210 miles north of Miami, and approximately 60 miles east of Orlando. It is 4.5 miles wide at its widest point. The northern boundary of CCAFS abuts the Kennedy Space Center (KSC) boundary on the barrier island. The southern boundary abuts Port Canaveral. The Banana River separates CCAFS from KSC. The Atlantic Ocean borders CCAFS along its eastern margin. The only natural areas remaining in the vicinity are Federally owned lands (CCAFS, KSC, and Canaveral National Seashore) to the north. CCAFS occupies approximately 15,800 acres, most of which is undeveloped coastal strand/scrub habitat.

As one of the Eastern Range (ER) stations CCAFS' primary mission is to provide launch and tracking facilities, safety procedures, and test data to a variety of users. Major users at CCAFS include the United States Air Force (USAF), the United States Navy (USN), the National Aeronautics and Space Administration (NASA), and commercial launch companies. The 45 SW of the USAF operates CCAFS. The primary mission of the 45 SW is to develop, maintain, operate, and manage the ER.

Approximately 417 towers currently exist at various locations throughout CCAFS.

1.1.2 Patrick Air Force Base

Located on a barrier island on the east-central coast of Florida, south of the City of Cocoa Beach, PAFB covers approximately 1,937 acres bounded by the Atlantic Ocean on the east and the Banana River on the west. There is little topographic relief across PAFB, with elevations from 0 to 6.1 meters above mean sea level (msl); the highest elevation corresponding to sand dunes along the Atlantic Ocean. From the dunes, the site gently slopes northwest toward the Banana River shoreline.

Patrick Air Force Base's mission includes responsibility for safety, planning, engineering support services, scheduling, test operations, launch and range operations, directing or supporting operations, test results evaluation, and providing similar support to other DoD and non-DoD programs.

Patrick Air Force Base, Headquarters of the 45 SW, is the center of administrative activities that CCAFS, MTA, JDMTA, two additional downrange stations at Antigua and Ascension Island, and other tracking stations are located at PAFB.

Most of the Base is developed, except for the coastal areas, which have remained relatively undeveloped. Exceptions include the Officers' Club, Non-Commissioned Officers' Club, some Base housing, and a radar and launch-tracking site. The Archie Carr National Wildlife Refuge to the south, and federally owned lands (CCAFS, KSC, and Canaveral National Seashore) to the north are considered "natural" areas near PAFB.

Approximately 25 towers/antenna equipment sites are located at PAFB. All towers are surrounded by either regularly maintained grasses or impervious surfaces. Reinspection of existing towers and an updated listing is anticipated to be completed in FY05.

1.1.3 Malabar Transmitter Annex

Located in Palm Bay, Florida, approximately eight miles southwest of Melbourne and 35 miles southwest of CCAFS, MTA occupies a square mile section (640 acres) comprised of forest, grassy fields, abandoned runways, antenna fields, and numerous transmitter and support buildings. The Annex is one of five mainland Florida instrumentation sites, which are part of the 45 SW. The abandoned airfield site was selected because of its distance from CCAFS operations and remote location regarding public access.

Buildings, a paved airfield, and roads cover approximately 120 acres in the center of the site. Another 250 acres are regularly mowed around the antenna structures, in the cleared lines-of-sight, and along roads that run through woods. The remaining acreage consists of unimproved grounds, predominantly mesic flatwoods. The natural areas are mainly restricted to the periphery of MTA and all have been disturbed somewhat. Currently, MTA is surrounded by residential subdivisions. However, the Malabar Scrub Sanctuary is approximately seven miles to the east on Malabar Road, and Turkey Creek Sanctuary (113 acres) is approximately four miles to the east.

The mission of MTA is to collect, process, and deliver test-related data to user agencies conducting tests or space launches from CCAFS, KSC, and submarine test launches conducted in offshore waters. The 5,000-square-foot transmitter building, with its associated antennas, was constructed in 1963 and has been in continuous operation since that date. In addition, a remote electro/optical-tracking site, operated by USAF Space System Division, headquartered in Los Angeles, California, is located in the northwest corner of the Annex. All activities at MTA are conducted in support of these two operations. Approximately 19 towers are located at MTA.

At MTA, semi-improved grounds surround the numerous antenna facilities, boresight towers, and cleared lines-of-site. Semi-improved grounds are maintained at a height between 4 and 15 inches. Fertilizer is applied on an as needed basis. There are currently approximately 250 acres of semi-improved grounds at MTA.

Today, the natural communities on MTA are not of high quality due to extensive development as a result of land disturbances over the years. Alterations include direct disturbances such as airfield pavement, mowed antenna fields, roads, structures, and military exercise areas, and indirect disturbances such as the suppression of the natural fire regime and the modification of the local hydrology. However, flatwood and prairie wetlands do exist in some areas of MTA.

1.1.4 Jonathan Dickinson Missile Tracking Annex

Located 120 miles south of PAFB and 15 miles north of West Palm Beach, JDMTA occupies approximately 11 acres in the southern end of Jonathan Dickinson State Park in Martin County, on Florida's east coast. Three parcels of land consisting of 8.49 acres, 2.12 acres, and 0.9 acres compose JDMTA within Jonathan Dickinson State Park (JDSP).

The site houses four telemetry units, which provide in-flight monitoring of launch vehicle performance, electronics, and associated subsystems. The site also provides radar, flight test support systems, a microwave relay to CCAFS, and a command destruct system remotely activated from CCAFS to protect life and property should a launch vehicle veer off course. Most of JDMTA is surrounded by the natural sand

pine/oak/rosemary scrub of JDSP. Only the west side and some of the south areas adjacent to JDMTA are residential developments. Approximately 22 towers are located at JDMTA.

1.2 Purpose and Need for Action

The purpose of the Proposed Action is to construct, maintain, and decommission various types of towers located on 45 SW properties. Repairs and modifications are required for a variety of towers in order to maintain proper working condition. The construction of new towers is occasionally required to support the 45 SW mission, and the existing towers are normally demolished if they are considered outdated or no longer useful.

1.3 Scope of Programmatic Environmental Assessment

This PEA evaluates the environmental consequences associated with general construction, maintenance, and demolition activities associated with communications, wind, water, and camera towers at CCAFS, PAFB, MTA, and JDMTA and the No Action Alternative. The potential environmental impacts associated with the proposed activities are considered on a programmatic level.

Tiering of environmental documents refers to the process of addressing a broad, general program, policy, or proposal in an initial environmental document, and analyzing a narrower site-specific proposal, related to the initial program, plan, or policy in a subsequent, abbreviated environmental document. The concept of tiering was promulgated in the 1978 CEQ regulations; the preceding CEQ guidelines had not addressed the concept. The Council's intent in formalizing the tiering concept was to encourage agencies "to eliminate repetitive discussions and to focus on the actual issues ripe for decisions at each level of environmental review" (Federal Register, 1978).

Much of the information presented in this PEA will be tiered from existing documentation, including the *Programmatic Environmental Assessment of Land Clearing Activities for Cape Canaveral Air Force Station, Patrick Air Force Base, Malabar Transmitter Annex, and Jonathan Dickinson Missile Tracking Annex* (2005). Information tiered from this EA includes background information and impacts from land clearing activities for new tower construction sites.

Future tower related construction, maintenance, and demolition activities that have the potential to significantly impact the environment and are part of the Proposed Action, as defined in this PEA, would be reviewed in separate EAs. Such analyses would tier off of this PEA to eliminate repetitive discussions of issues already addressed and focus on newly identified issues, such as the potential effects to an endangered species that is discovered to utilize the proposed action areas.

2.0 Description of Proposed Action and Alternatives

This section describes the Proposed Action and Alternatives to the Proposed Action.

2.1 Description of Proposed Action

The Proposed Action is to construct, maintain, and demolish, as needed, communications, wind, water, and camera towers located on 45 SW properties. The maintenance of the towers would include a range of procedures from corrosion control to lightning protection. An Operations and Maintenance Instruction is currently being developed that details maintenance guidelines for self-supporting, guyed, and monopole towers. New masts air terminals, down conductors, bonding clamps, and grounding rods may be installed on some of the towers. Typical tower maintenance may require the replacement of guy grounding systems and foundations that may require excavation, backfill, and welding. Repair/maintenance or replacement of aircraft warning light systems may also be performed. Additionally, stripping, washing, priming, and repainting are maintenance activities that may be required. This periodic maintenance would assure safety and extend the service life of the towers.

All USAF-owned towers would be evaluated for maintenance and ranked based upon several criteria, including:

- Previously identified maintenance concerns or safety issues
- Mission criticality
- Last known date of preventive maintenance
- Tower size

Major inspections would be performed at least every three years for guyed towers, every five years for self-supporting towers, and after hurricane-force winds.

Construction and/or demolition of towers would occur periodically and may include the installation of grounding and lightning protection, aviation warning light systems, 120 VAC general lighting systems and power receptacles, and cable tray systems. Also, additional sensors and/or equipment may be required to be installed on existing towers. New guy wire foundations may be installed and small associated facilities could be required to house electrical equipment used to support the tower.

2.2 Alternatives Eliminated from Further Consideration

Other alternatives considered to the Proposed Action include the alternative that no new towers would be constructed, current maintenance procedures would not be performed; and obsolete towers would not be removed. The lack of repairs would impede the 45SW mission. The ability to retrieve data from these assorted towers, that include the support of security, safety, and environmental monitoring, would be negatively impacted. Furthermore, new towers are required to support various new mission requirements. This alternative is not considered viable, and was eliminated from further consideration.

2.3 No Action Alternative

The only alternative identified to the Proposed Action is the No Action Alternative. Under the No Action Alternative, new towers would continue to be constructed, current maintenance procedures would still be performed; and obsolete towers would be removed. However, each activity would need to be evaluated on a case-by-case basis. There would be a requirement to conduct site-specific NEPA documentation for each of the activities covered in this PEA. This inefficiency would result in delays and increase the time, effort, and cost for the 45SW to accomplish these tasks.

2.4 Potential Environmental Issues

Eleven broad environmental components were initially considered to provide a context for understanding the potential effects of the Proposed Action and as a basis for assessing the significance of potential impacts. The areas of environmental consideration were air quality, biological resources, cultural resources, hazardous materials and waste, health and safety, infrastructure and transportation, land use, noise, geology, soil and water resources, and socioeconomics.

Potential, though non-significant, impacts from the implementation of the Proposed Action have been identified for biological resources, geology, and soil and water resources, hazardous materials and waste, health and safety, and land use/zoning/air compatibility. A more detailed analysis of impacts to the identified resources is presented in Chapter 4.0.

A comparison matrix of the potential impacts resulting from the Proposed Action is provided in Table 2-1.

Three levels of impact are defined as follows:

- No Impact - No impact is predicted.
- Not Significant Impact - An impact is predicted, but the impact does not meet the intensity/context significance criteria for the specific resource.
- Significant Impact - An impact is predicted that meets the intensity/context significance criteria for the specific resource.

Table 2-1: Environmental Impact Matrix

Environmental Components	Proposed Action	No Action Alternative
<i>Air Quality</i>	No Significant Impact	No Significant Impact
<i>Biological Resources</i>	No Significant Impact	No Significant Impact
<i>Cultural Resources</i>	No Impact	No Impact
<i>Geology, Soils, and Water Resources</i>	No Significant Impact	No Significant Impact
<i>Hazardous Materials and Waste</i>	No Significant Impact	No Significant Impact
<i>Health and Safety</i>	No Significant Impact	No Significant Impact
<i>Infrastructure and Transportation</i>	No Significant Impact	No Impact
<i>Land Use and Zoning</i>	Potential Beneficial Impact	No Impact
<i>Noise</i>	No Significant Impact	No Significant Impact
<i>Socioeconomics</i>	No Significant Impact	No Significant Impact

2.4.1 Issues Eliminated from Detailed Analysis

Following a preliminary analysis, the USAF determined that no impacts or less than significant impacts would be anticipated to air quality, cultural resources, infrastructure and transportation, noise, and socioeconomics. The following is a summary of the minor impacts that might be anticipated for these categories.

2.4.1.1 Air Quality

Short-term impacts associated with construction-related emissions would be expected. Most construction-related emissions are exempt from regulatory review provided that National Ambient Air Quality Standards (NAAQS) would not be exceeded. Except for dust, emission of criteria pollutants by project-related vehicles and equipment during the construction period would be minor. During installation, ground surface disturbance would occur. Dust suppression techniques would be used as necessary to mitigate wind and water erosion and reduce airborne emissions. Decommissioned towers would be dismantled and removed creating minor, short-term emissions. Changes in local air quality resulting from these sources would not be significant. Due to the relatively small footprint of the towers and the short time necessary for the construction and/or demolition of towers, cumulative impacts would also not be significant. The following regulations should be reviewed to ensure compliance.

Law or Rule	Permit/Action(s)	Requirement	Agency or Organization
Clean Air Act (CAA)	Title V Air Operating Permit	Comply with existing Title V Air Operating Permit.	US Environmental Protection Agency (EPA), Florida Department of Environmental Protection (FDEP)
National Ambient Air Quality Standards (NAAQS) and Florida Ambient Air Quality Standards (FAAQS)	Ambient air quality maintenance	Implement measures to protect health and safety, property, and minimize nuisances such as impaired visibility.	USEPA; FDEP
Air Force Instruction (AFI) 32-7040	Estimate air emissions	Track vehicle use and estimate air emissions for PAFB and CCAFS for inclusion in the Air Emissions Inventory (AEI).	United States Air Force (USAF)

2.4.1.2 Cultural Resources

Cultural resources include prehistoric-archaeological, historic, architectural, and Native American resources. Areas of potential impact include properties, structures, landscapes, or traditional cultural sites that qualify for listing in the National Register of Historic Places (NRHP). Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) requires federal agencies to consider the effects of their actions on historic properties. Documented NRHP structures or sites may occur at some of the current locations under the Proposed Action; however, new towers would not be constructed in NRHP-eligible locations, if possible. All tower activities would be coordinated with the 45 SW CEV to assure Section 106 compliance. No significant, unavoidable impacts are anticipated to cultural resources from the implementation of the Proposed Action. No cumulative impacts to cultural resources would be anticipated.

2.4.1.3 Infrastructure and Transportation

Traffic would only be temporarily delayed to allow construction vehicles to safely enter and exit work areas and to slow the flow of traffic adjacent to active work zones. Modifications to the existing infrastructure and transportation system would not be anticipated. However, if access points are changed, the Florida Department of Transportation will be consulted. Less than significant impacts are anticipated to

infrastructure and transportation from the Proposed Action. No cumulative impacts to infrastructure and transportation would be anticipated.

2.4.1.4 Noise

The Environmental Protection Agency (EPA) administers the Noise Control Act of 1972, and has identified 65 dB (A-scale) as a desirable noise level for compatible land uses. This level is not regarded as a noise standard, but simply a basis to set appropriate standards that should also factor in local considerations and issues.

Short-term noise impacts associated with the site clearing and preparation, installation, maintenance activities, and demolition activities are anticipated. Except for the use of specific equipment during brief periods, average project-related noise is expected to be well below the recommended levels for human exposures.

The use of hearing protection devices during the operation of equipment would mitigate potential impacts to personnel. Noise abatement devices on equipment and vehicles would further minimize the potential for adverse noise effects to personnel and wildlife. The moderate level of noise generated from Proposed Action activities would act as a warning mechanism for wildlife in the area, allowing them time to temporarily vacate the area.

Vehicles associated with the Proposed Action typically have a dBA between 65 and 100, at a distance of 50 feet (USEPA, 1971). Less than significant impacts would be anticipated because all work activities of the Proposed Action would be confined to daylight hours to avoid nuisance noise in the evenings. No cumulative impacts would be anticipated.

2.4.1.5 Socioeconomics

Socioeconomics comprise such interrelated resources as population, employment, income, temporary living quarters (during construction), and public finance. It is not likely that the Proposed Action will affect employment patterns on a permanent basis or induce substantial growth or growth-related impacts. The towers will be unmanned, and no increase in population levels would result. No significant impact is anticipated from the Proposed Action and no cumulative impacts to socioeconomics would be anticipated.

2.4.2 Regulatory Requirements

Permits that may need to be acquired and other requirements that may need to be satisfied prior to or during tower construction, maintenance, or demolition activities are addressed in the appropriate resource section. Activities on 45 SW-managed lands must comply with Federal regulations applicable to USAF installations as well as 45 SW instructions. In addition, Chapter 3 of AFI 32-7064, *Integrated Natural Resources Management*, requires compliance with State and local wetland protection laws; Chapter 5 requires all USAF activities conducted within U.S. coastal waters to comply with the coastal zone protection laws and guidelines; Chapter 7 requires the USAF to protect State-listed endangered, threatened, or rare species, when possible.

Maintenance and construction activities involving any elevated potable water storage tanks are regulated through the FDEP Drinking Water Section. Specific requirements include, but are not limited to, the necessity to have modification and/or maintenance activities of water storage tanks supervised by a Florida registered Professional Engineer.

Florida has a comprehensive State regulatory program that regulates most (upland, wetland, and other surface water) alterations. An Environmental Resource Permit (ERP) serves as multi-purpose permit that covers mangrove impacts, alteration of uplands, Florida Coastal Zone Management and water quality certification requirements (if a Clean Water Act (CWA) Section 404 permit is required for dredge and fill activities). The ERP Program is implemented jointly by U.S. Army Corps of Engineers, FDEP and local water districts (SJRWMD and SFWMD in this case).

3.0 AFFECTED ENVIRONMENT

In compliance with NEPA and CEQ guidelines, this Chapter describes the existing environment within the Proposed Action areas at CCAFS, PAFB, MTA, and JDMTA. This information serves as a baseline from which to identify and evaluate potential environmental changes resulting from implementation of the Proposed Action. These resources and conditions include the following areas: biological resources, geology, soil and water resources, hazardous materials and waste, health and safety, and land use, zoning and air compatibility.

3.1 Biological Resources

The USAF is committed to the long-term management of all natural areas on its installations, as directed by AFI 32-7064, *Integrated Natural Resources Management*. Long-term management objectives are identified in the 45 SW's *Integrated Natural Resources Management Plan (INRMP)* with specific land-management objectives identified in the Scrub Jay and Sea Turtle Management Plans located in the appendices of the INRMP. The following information was derived from several sources, including the 2001 INRMP, which is currently being updated. Towers could potentially be constructed throughout the 45 SW, which would include many impacted vegetation communities and wildlife. All of these communities and wildlife are documented in detail in the 2005 *Programmatic Environmental Assessment (PEA) for Land Clearing Activities*, and this document will tier information from the existing EA when relevant.

Biological resources covered in this section include native and naturalized vegetation communities and special-status species. Vegetation communities include both upland and wetland habitats. Special-status species include Federal and State species of special concern, threatened and endangered species, rare species, and migratory birds.

3.1.1 CCAFS

3.1.1.1 Invasive Species

Most of the areas on CCAFS that are disturbed, including roads, utility corridors, and launch complexes, have a healthy invasive species component. Brazilian pepper predominates the invasive flora at CCAFS with six other invasive weeds present in lower densities. The most widespread of these is Australian pine. Australian pine trees grow singly or as small, dense groves scattered across the base. In addition, cogon grass, melaleuca, mistletoe (*Phoradendron serotinum*), and small populations of thistles (*Cirsium* spp.) and nettles (*Urtica* spp.) are present. (Invasive Plant Species Control Plan for CCAFS, 2004) The presence of these and other invasive species is discussed below by habitat type.

3.1.1.2 Native Vegetation Communities and Wildlife

The topographic position of natural communities on CCAFS reflects the various erosional and depositional processes of coastal land formation. Generally, older communities are found on the western margin of the Canaveral Peninsula, along the Banana River; newer and successional communities are forming along the eastern

coast. The current vegetative communities found on CCAFS are described below in the general order of the zones they occupy, east to west. Wildlife species, including sensitive and special-status species, are discussed by vegetation community. Refer to the 2005 Land Clearing PEA for detailed information on these vegetative communities and the wildlife that inhabits them.

Beach Dunes

Of all the community types on CCAFS, beach dunes receive the most direct influence from the coastal processes of erosion and deposition. Dunes are highly unstable and dynamic communities. Two beaches on CCAFS are prograding (growing): since 1847 False Cape at the north end of the station has had a net increase of approximately 0.1 mile; Cape Canaveral is also prograding as demonstrated by several parallel lines of dunes and by conspicuous offshore sand bars. Other beach areas are eroding, with sands being deposited offshore or downshore.

The Atlantic Ocean borders the beach dune community on the east, and grades inland to coastal grassland or coastal strand communities. Where the dunes are low or dissected, and storm overwash is frequent, coastal grassland has developed in flat areas directly behind the dunes. In higher or more stable areas, beach dunes may grade directly into shrub dominated coastal strand.

State-listed plant species found on dunes at CCAFS are coastal vervain (*Glandularia maritima*), beach star (*Remirea maritima*), and sea lavender (*Tournefortia gnaphalodes*).

Several rare animal species are documented on CCAFS beach dunes. The southeastern beach mouse inhabits beach dunes and adjacent communities. A colony of least terns has been documented to nest on CCAFS beaches. Black skimmers have also been documented nesting on the beach. Beaches on CCAFS are also very important nesting habitat for two species of sea turtles, the Atlantic green sea turtle and loggerhead turtle. There have been documented nestings by the endangered leatherback turtle as well.

Coastal Grasslands

This flat, open community lies directly landward of the beach dunes on CCAFS. It occurs in two types of situations: on relatively young deposits of sand on prograding beaches, and in low areas where saltwater overwash has killed woody strand vegetation. Inland, coastal grassland is bordered by coastal strand or coastal oak scrub, both of which develop on older sand deposits protected from frequent disturbance. In the absence of storm overwash or other disturbance, grassland will probably be colonized by woody species and eventually succeed into scrub or strand.

Coastal grasslands are densely vegetated areas, and the CCAFS grasslands are home to two State-listed plant species: coastal vervain and Florida lantana (*Lantana depressa* var. *floridana*).

Gopher tortoises, southeastern beach mice, deer, and raccoons are just a few of the wildlife species that inhabit coastal grasslands. Least terns and black skimmers may nest in the transition zone between the beach dunes and coastal grassland if the vegetation is sparse.

Coastal Strand

This community develops in the absence of natural disturbance on somewhat older deposits of sand, inland of beach or coastal grassland. It is a dense, shrub-dominated community that grades landward into scrub or maritime hammock. The most distinctive feature of coastal strand is the wedge-shaped profile of its low canopy, which is constantly pruned and shaped by windborne salt spray.

Two State-listed plant species have been documented from disturbed areas and natural openings in coastal strand on CCAFS: beach star and coastal vervain.

Florida scrub jay, Florida mouse, and southeastern beach mouse have been observed in coastal strand at CCAFS. Gopher tortoise burrows are common in clearings in the strand. Burrows provide important refugia for Eastern indigo snakes, eastern diamondback rattlesnakes, and Florida pine snakes.

Coastal Interdunal Swales

Receding shorelines dating from the Pleistocene era have left behind a series of old dune ridges alternating with swales on CCAFS. These relict sand deposits form long ridges that are usually oriented in a northeast to southwest direction. The ridges and swales are conspicuous on topographic maps and aerial photographs of CCAFS. Swales are seasonally saturated or inundated from groundwater part of the year and support distinctive wetland plant communities.

One State-listed plant species that requires open, sunny conditions has been observed in dry swales, coastal vervain.

Gopher tortoises have been observed in these coastal interdunal swales; however, their burrows are more common in drier swales. Wading birds, such as the great egret and great blue heron, forage in the wetter swales. Bobcats have also been observed in the swales.

Scrub

Three phases of the scrub community occur on CCAFS: coastal oak scrub, oak scrub, and rosemary scrub.

Coastal Oak Scrub

Coastal oak scrub occurs directly landward of beach dunes or, if they are present, coastal strand or grassland. Scrub may occupy the same landscape position as coastal strand, but its low species diversity and oak dominance distinguish it. Although mapped by the Soil Conservation Service (SCS) as occurring on similar soils as coastal stand, the lack of calciphilic plant species suggests that coastal oak scrub occurs on older, more weathered, and more acidic soils.

Oak Scrub

Oak scrub occurs inland of coastal scrub, out of the salt-spray zone, primarily occupying the oldest, most weathered sand deposits on the Canaveral Peninsula. Oak scrub on

CCAFS occupies the highest, driest habitats. It grades westward into maritime and hydric hammock along the Banana River and eastward into maritime hammock, coastal strand, or coastal oak scrub.

Rosemary Scrub

Rosemary scrub occurs in only one location on CCAFS, at the north end bordering the Banana River. The rosemary scrub is relatively open, with scattered clumps of rosemary interspersed with dense thickets of myrtle oak and sand live oak. Openings among the shrubs are either bare or vegetated with gopher apple, hog plum, and shiny blueberry. Gopher tortoises and scrub jays are often seen in the rosemary scrub.

Xeric Hammock

This community consists of scrubby, dense, low canopy forest with little understory other than saw palmetto (FNAI and FDNR, 1990). Large portions of the interior of CCAFS meet this description. Xeric hammock occupies many of the broad, old dune ridges that angle across CCAFS, interspersed with coastal interdunal swales.

Xeric hammock is species depauperate: the canopy is composed of live oak and the shrub layer of saw palmetto. Woody vines are the most conspicuous and diverse component of xeric hammocks. Muscadine grape, Calusa grape, catbrier, pepper vine (*Ampelopsis arborea*) and Virginia creeper are found in most xeric hammock. Large expanses of grapevines, commonly draped across the canopy of scrub and xeric hammock on CCAFS, are evidence of fire suppression.

Maritime Hammocks

Maritime hammock is found on CCAFS in two locations: on the east side of the Installation, just landward of coastal strand, referred to here as Atlantic maritime hammock; and on the west side of the Canaveral Peninsula, bordering the Banana River, referred to as Banana River maritime hammock. The distinction between the types of maritime hammock blends toward the north end of CCAFS where the peninsula narrows to less than half a mile. Atlantic maritime hammock would not be impacted by the proposed action.

Banana River Maritime Hammock

Banana River maritime hammocks largely occupy a ridge of shell midden along the west side of CCAFS. Banana River maritime hammocks differ from the Atlantic maritime hammocks in several respects. They are somewhat sheltered from direct impacts of storms, as well as salt spray; they are found in association with Indian shell middens and mounds, which have soils with higher pH and permeability; and they have also received more direct impacts from settler and homesteading activities. These hammocks are ecologically significant since they provide habitat for numerous tropical species that approach their northern limits in these forests.

Two state-listed plant species occur in Banana River maritime hammock on CCAFS: satinleaf (*Chrysophyllum oliviforme*) and hand fern (*Ophioglossum palmata*), an epiphytic fern. No rare animals have been observed in these communities.

Hydric Hammock

Hydric hammock occurs west and down slope from the shell ridge of maritime hammock along the western side of CCAFS. Elevated areas within the hydric hammock also support patches of maritime hammock. Included within the hydric hammock are other small unseparated swamp communities. Brazilian pepper is common in the understory of intact hydric hammocks, having invaded from nearby disturbed areas.

No listed plants or animals have been identified in hydric hammock on CCAFS.

3.1.1.3 Wetlands and Floodplains

Wetlands are the transition zones between dry upland ecosystems and deeper aquatic habitats. Each wetland area is unique according to its surrounding geologic, hydrologic, and climatic conditions. Wetlands are key to maintaining the health of aquatic habitats; they provide flood control, aquifer recharge, coastal protection, and act to help filter pollutants from the ecosystem. Wetlands often support a wide range of rare and endangered aquatic plants and wildlife, and humans have relied on wetlands as a source of food and recreation for centuries.

A floodplain is the lowland adjacent to a river, lake, or ocean. Floodplains are designated by the frequency of the flood that is large enough to cover them. Flood frequencies, such as the 100-year flood, are determined by plotting a graph of the size of all known floods for an area and determining how often floods of a particular size occur.

Within the two major categories of wetlands (estuarine and freshwater), several types of wetland environments are found within the proposed action areas on CCAFS (Figure 3-1). These include mangrove estuaries and shorelines, salt marsh wetlands, freshwater wetlands, impoundments and drainage canals. Each of wetland type is described separately due to their unique values.

Mangrove Wetlands

Estuarine wetlands dominated by woody cover are typically mangrove communities located on the fringes of the Banana River and adjacent impoundments. Mangrove communities are very fragile and can easily be altered by dredging, flooding, impounding and clearing. Florida Statute 861.02 protects mangroves, and two species are listed as Species of Special Concern by the State. The following shrubs and trees, including all three North American mangrove species, are found in this community: black mangrove (*Avicennia germinans*), red mangrove (*Rhizophora mangle*), white mangrove (*Languncularia racemosa*), salt bush (*Baccharis halimifolia*), and sea oxeye (*Borrchia frutescens*).

No rare plants are known from the estuarine communities. American alligators, ospreys, bald eagles, and northern harriers have been observed in the marshes and swamps.

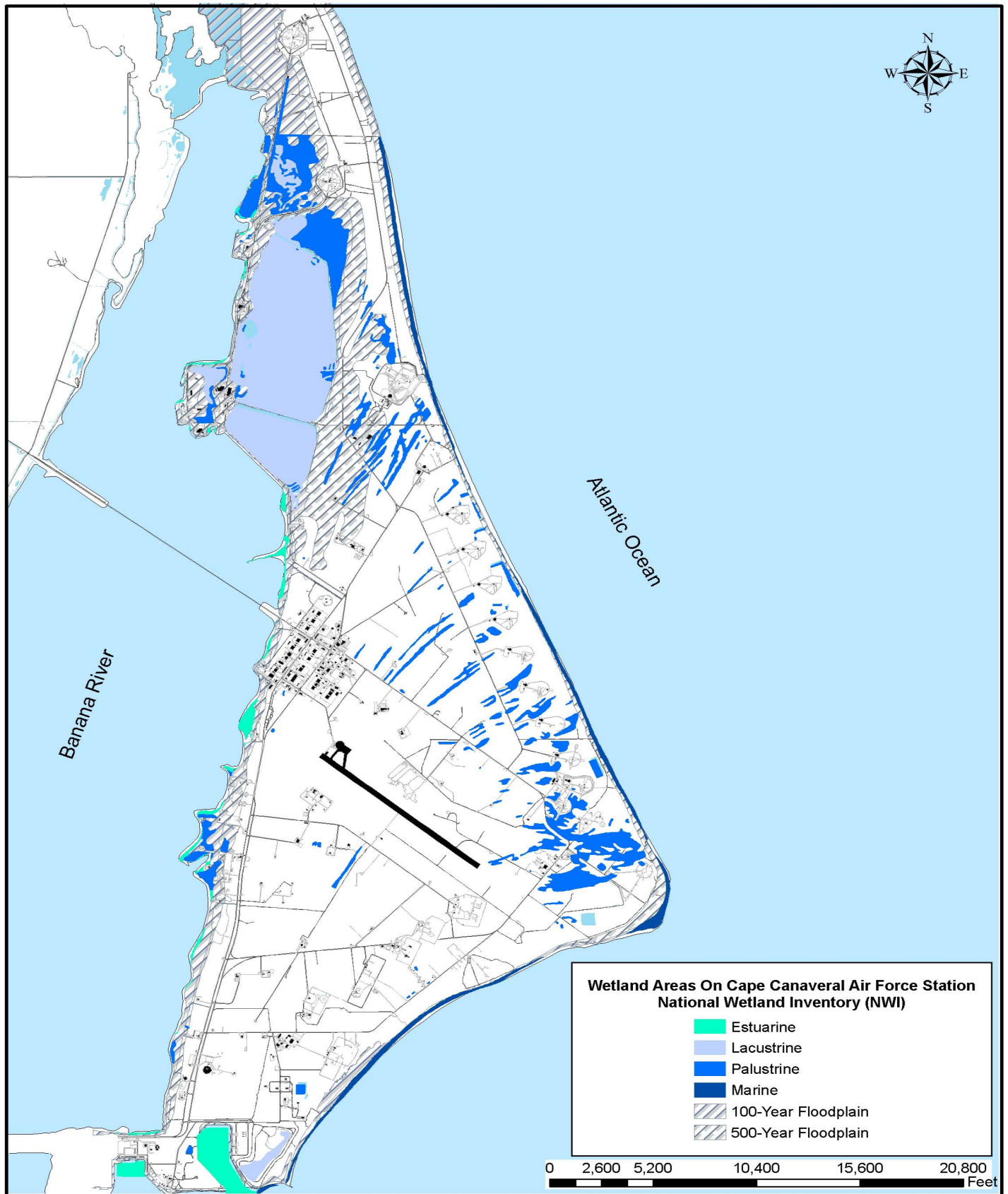


Figure 3-1: National Wetlands Inventory for CCAFS

Salt Marshes

These communities exist among the intertidal shorelines and tidal wetlands of the Indian River lagoon system throughout CCAFS. The majority of the riverfront of the Banana River along CCAFS has been disturbed by the construction of mosquito control ditches and dikes or construction of facilities by the USAF to support their programs. Some remnants of a salt marsh exist west of SLC-40. These areas have been isolated from the waters of the Banana River and are experiencing a succession change to a freshwater marsh community.

Brackish Water Impoundments

There are four major brackish water impoundments located on CCAFS. The impoundments were created by construction of a power line access roadway across the tips of convoluted portions of the North Banana River shoreline. An additional impounded area exists between SLC-40 and the SLC-41 transporter roadways. This area appears to have originally existed as a salt marsh dominated by non-woody vegetation.

Freshwater Wetlands

Freshwater wetlands located in the proposed action areas are interdunal swales, drainage canals, and watersheds that have undergone succession and are currently in the marsh stage. There are approximately 52 miles of drainage canals comprising 63 acres of surface water on CCAFS. Marsh-like conditions exist in some sections of the CCAFS drainage canal system and other low-lying areas associated with topographic undulations between relic dune ridges transecting CCAFS. Several of these marshy areas are temporary, resulting from seasonal variation in precipitation. The areas are periodically utilized by resident and migratory wildlife species but will not be cited specifically here due to their seasonal variability. For more detailed information on faunal species, refer to the 2005 Land Clearing PEA.

3.1.1.4 Threatened, Endangered and Sensitive Species

A large number of Federal- and State-listed species, as well as others species that are considered sensitive, utilize habitat on CCAFS. Listed and sensitive species that are known to be present on or near the boundaries of the Installation are presented in Tables 3-1 and 3-2.

Table 3-1 provides a list of protected and sensitive plants that are found on CCAFS, along with the status of each. There are no known Federal-listed plants on CCAFS.

Status of Threatened, Endangered and Sensitive Animals

Table 3-2 provides a list of protected animals that are found on CCAFS, along with the status of each. There are several Federal-listed animals on CCAFS.

Table 3-1: Status of Endangered and Threatened Plants on CCAFS

Scientific Name	Common Name	Status FDA ¹
<i>Asclepias curtissii</i>	Curtiss' milkweed	E
<i>Chamaesyce cumulicola</i>	Sand dune spurge	E
<i>Chrysophyllum oliviforme</i>	Satinleaf	T
<i>Lantana depressa</i> var. <i>floridana</i>	Florida lantana	E
<i>Lechea cernua</i>	Nodding pinweed	T
<i>Myrcianthes fragrans</i>	Nakedwood, Simpson's stopper	T
<i>Ophioglossum palmatum</i> (<i>Cheiroglossa palmata</i>)	Hand fern	E
<i>Opuntia stricta</i>	Shell mound prickly-pear cactus	T
<i>Remirea maritime</i>	Beach star	E
<i>Scaevola plumieri</i>	Scaevola, inkberry	T
<i>Tournefortia gnaphalodes</i> (<i>Argusia gnaphalodes</i>)	Sea lavender	E
<i>Verbena maritime</i> (<i>Glandularia maritima</i>)	Coastal vervain	E

¹Chapter 5B-40 FAC 2003)

E= Endangered

T= Threatened

Table 3-2: Status of Threatened and Endangered, and Sensitive Animals Found on CCAFS

Common Name	Scientific Name	Status	
		USFWS ¹	FFWCC ²
American Alligator	<i>Alligator mississippiensis</i>	T (S/A)	SSC
Loggerhead Seaturtle	<i>Caretta caretta</i>	T	T
Atlantic Green Sea Turtle	<i>Chelonia mydas</i>	E	E
Leatherback Turtle	<i>Dermochelys coriacea</i>	E	E
Gopher Tortoise	<i>Gopherus polyphemus</i>		SSC
Eastern Indigo Snake	<i>Drymarchon corais couperi</i>	T	T
Florida Pine Snake	<i>Pituophis melanoleucus mugitus</i>		SSC
Roseate Spoonbill	<i>Ajaia ajaja</i>		SSC
Florida Scrub jay	<i>Aphelocoma coerelescens</i>	T	T
Piping Plover	<i>Charadrius melodus</i>	T	T
Little Blue Heron	<i>Egretta caerulea</i>		SSC
Reddish Egret	<i>Egretta rufescens</i>		SSC
Snowy Egret	<i>Egretta thula</i>		SSC
Tricolored Heron	<i>Egretta tricolor</i>		SSC
White Ibis	<i>Eudocimus albus</i>		SSC
Peregrine Falcon	<i>Falco peregrinus</i>		E
Southeastern American Kestrel	<i>Falco sparverius paulus</i>		T
American Oystercatcher	<i>Haematopus palliatus</i>		SSC
Bald Eagle	<i>Haliaeetus leucocephalus</i>	T	T
Wood Stork	<i>Mycteria americana</i>	E	E
Brown Pelican	<i>Pelecanus occidentalis</i>		SSC
Black Skimmer	<i>Rynchops niger</i>		SSC
Least Tern	<i>Sterna antillarum</i>		T
Southeastern Beach Mouse	<i>Peromyscus polionotus niveiventris</i>	T	T
Florida Mouse	<i>Podomys floridanus</i>		SSC
Florida Manatee	<i>Trichechus manatus</i>	E	E

¹USFWS

E=Endangered: species in danger of extinction throughout all or a significant portion of its range.
T=Threatened: species likely to become endangered within the foreseeable future throughout all or a significant portion of its range.
T(S/A)=Threatened due to similarity of appearance to a species which is federally listed such that enforcement personnel have difficulty in attempting to differentiate between the listed and unlisted species.

² Florida Fish and Wildlife Conservation Commission (FFWCC)

SSC=Species of Special Concern

Migratory Birds

This AF Base is home to numerous birds listed on the USFWS migratory bird list, all of which are protected at the Federal level by the MBTA. All but a few bird species (e.g., pigeons, European starlings, etc.) found on CCAFS are on this list.

3.1.2 PAFB

Refer to the 2005 Land Clearing PEA for detailed information on these biological resources at PAFB.

3.1.2.1 Invasive Species

Two invasive plant species predominate PAFB: Brazilian pepper and Australian pine. These species are most often found in undeveloped areas and on the margins of improved/semi-improved areas. Brazilian pepper is typically found as isolated individuals in dense clumps around buildings and roads, or as long rows around waterways on the south and west boundaries of PAFB. Australian pines grow singly or as small, dense groves along the coast of the Banana River on the west side of the Base, and around the southeastern end of the airfield. Two other species that are considered noxious weeds are present, but in small numbers -- isolated melaleuca trees on the golf course, and isolated patches of torpedo grass around lagoons and ponds on the golf course. (Invasive Plant Species Control Plan for PAFB, 2004)

3.1.2.2 Native Vegetation Communities and Wildlife

Sand Dunes

Sand dunes on PAFB support a narrow strip of vegetation bordered by the Atlantic Ocean, State Route A1A, Base Housing, or areas of mowed grass. State-listed dune species, beach star can be found in the sand dune community.

Wildlife

Various species of wildlife inhabit, utilize, or frequent PAFB. The Installation is located on a barrier island and these types of ecosystems are important natural areas that support many plants, animals, and natural communities. Barrier islands along the Atlantic coast are especially important for nesting sea turtles, populations of small mammals, and as foraging and loafing habitat for a variety of resident and migratory shorebirds, wading birds, and songbirds.

3.1.2.3 Wetlands and Floodplains

Wetlands, defined as supporting aquatic vegetation for a given period, are very limited at PAFB. A few isolated areas intermittently support saltwater grasses. However, natural processes continually change these areas by filling them with sand or by removing sandbars and draining the areas. In addition, drainage canals that directly connect to the Banana River have been identified as jurisdictional wetlands/waters by the U.S. Army Corps of Engineers under Section 401 and 404, and as defined in Section 10 of the Rivers and Harbors Act. Figure 3-2 illustrates NWI wetlands and 100-year floodplains.

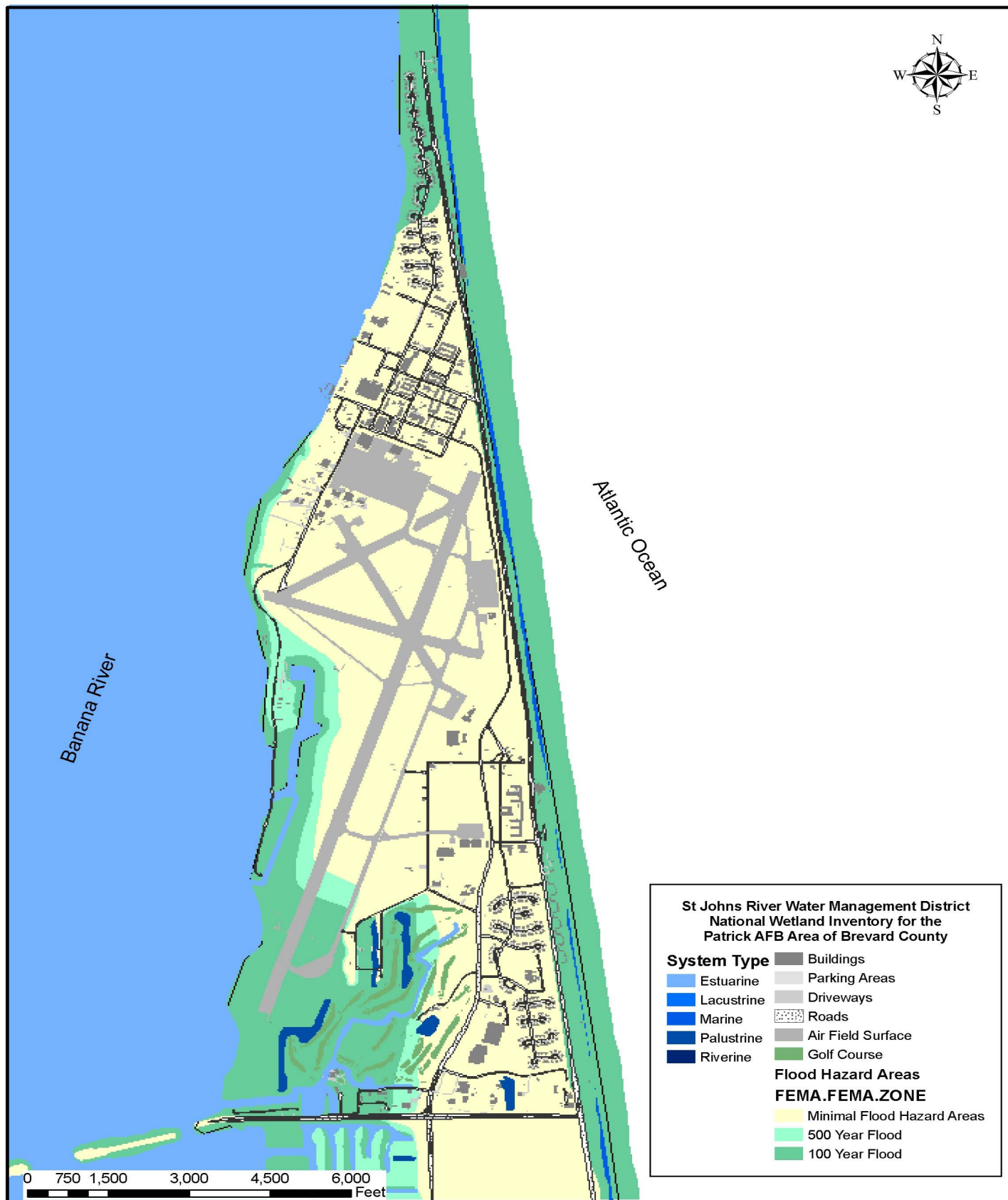


Figure 3-2: NWI for Patrick Air Force Base

Threatened, Endangered and Sensitive Species

No Federal-listed T&E plant species have been identified at PAFB. The following plants listed by the State of Florida have been observed on Base: beach star, inkberry, and prickly pear cactus. The black mangrove, red mangrove, and white mangrove occur along the Banana River shoreline and the edges of some canals.

There is no formally designated critical habitat on PAFB, as defined under Section 4 of the ESA. The current threatened, endangered, and sensitive species present on PAFB include: Florida manatee, American alligator, Atlantic loggerhead turtle, Atlantic green sea turtle, leatherback turtle, hawksbill turtle, gopher tortoise, Eastern indigo snake, roseate spoonbill, piping plover, little blue heron, reddish egret, snowy egret, tricolored heron, white ibis, southeastern American kestrel, Arctic peregrine falcon, American oystercatcher, bald eagle, wood stork, brown pelican, black skimmer, and least tern.

PAFB is located along one of the major migratory pathways for neotropical migrants that breed in eastern North America. Therefore, habitat on PAFB that is suitable for migrant birds is of conservation concern. During various other surveys conducted at PAFB in 1996, many neotropical migrants were observed using the dune habitat.

3.1.3 MTA

3.1.3.1 Invasive Species

Brazilian pepper comprises the majority of noxious weeds present on MTA. In addition, small populations of torpedo grass, mimosa, and thistles have been identified. (Invasive Plant Species Control Plan for CCAFS, 2004)

3.1.3.2 Native Vegetation and Wildlife

The natural communities on MTA are not of high quality due to extensive development. Alterations include direct disturbances such as airfield pavement, mowed antenna fields, roads, structures, and military exercise areas, and indirect disturbances such as the suppression of the natural fire regime and the modification of the hydrology. Occurrences of relatively higher quality mesic flatwoods and of depression marshes have been documented on MTA.

Although MTA is surrounded by commercial and residential development, it provides available habitat for common wildlife species including migratory and resident songbirds, amphibians, reptiles, and mammals. Refer to the 2005 Land Clearing PEA for detailed information on these vegetative communities and the wildlife that inhabits them.

Hydric Hammock

An area dominated by cabbage palms occurs in the flatwoods near the center of the south boundary of MTA. This may have been hydric hammock prior to the digging of the adjacent Melbourne-Tillman Canal. The discontinuous canopy consists of dense clusters of widely scattered palms. The noxious Brazilian pepper is an abundant shrub or small tree in this community.

Small fragments of what may also have been a hydric hammock cover about one acre at the northern boundary in the northwest section. The fragments are situated between mesic flatwoods and a depression marsh. This hammock is divided in two by the perimeter security fence and patrol road. The larger and more diverse part is north of the fence.

Mesic Flatwoods

Mesic flatwoods make up most (about 200 acres) of the forested areas remaining on MTA. The ground cover ranges from good to poor quality, reflecting past land clearing activities and fire suppression. Flatwoods of good quality occur in the northeast corner, the extreme southeast corner, and the center of the western side. The largest area of approximately 20 acres borders Minton Road at the north end of the Annex.

Similar but less diverse flatwoods cover another 20 acres just south of the entrance road. Most of this section has dense saw palmetto. The other mesic flatwoods on MTA are poor quality since they lack a natural ground cover due to past land clearing. They generally have a canopy of young to mature pines and sparse saw palmetto understory.

Wet Flatwoods

Wet flatwoods occur (with included small depression marshes) on approximately 80 acres in the southeast corner of MTA. Their poor condition makes their exact boundaries hard to delineate. This community has experienced fire suppression and disturbances such as drainage, mowing, and land clearing.

3.1.3.3 Wetlands and Floodplains

The natural communities at MTA are small remnants fragmented by human disturbances. The natural wetlands consist of depression marshes and wet flatwoods with scattered slash pine in the canopy. No 100-year floodplains are mapped on the NWI (Figure 3-3). However, approximately 80 acres of wet pine flatwood and wet prairie wetlands have been identified by SJRWMD. The wetlands occur primarily along the northwest and north sectors and include hydric soils.

Canals

Three canals are present on site, and are filled with vegetation. The deep Melbourne Tillman Canal borders the south boundary of the property and acts as the final destination of the water drained from the site by the two lesser conduits.

Depression Marsh

Small depression marshes are scattered around MTA. All have been adversely affected by drainage and fire suppression. Most hardly function as marshes and their presence is detected only because of their persisting wetland plant species.

Depression marsh covers approximately 1.5 total acres in the northeast quarter of the northwest quarter of MTA. These somewhat continuous shallow depressions form a mosaic with the prevalent mesic flatwoods. This marsh system has been given a marginal rank by FNAI due to its small size, lack of burning, and altered drainage. A

small isolated depression marsh of poor quality and less than 0.25 acre in size occurs west of the runway near the middle of MTA. Several other small depression marshes are in the southeast corner of MTA within the wet flatwoods. Brazilian pepper is not yet a problem in the wetland areas but is widespread in nearby disturbed areas.

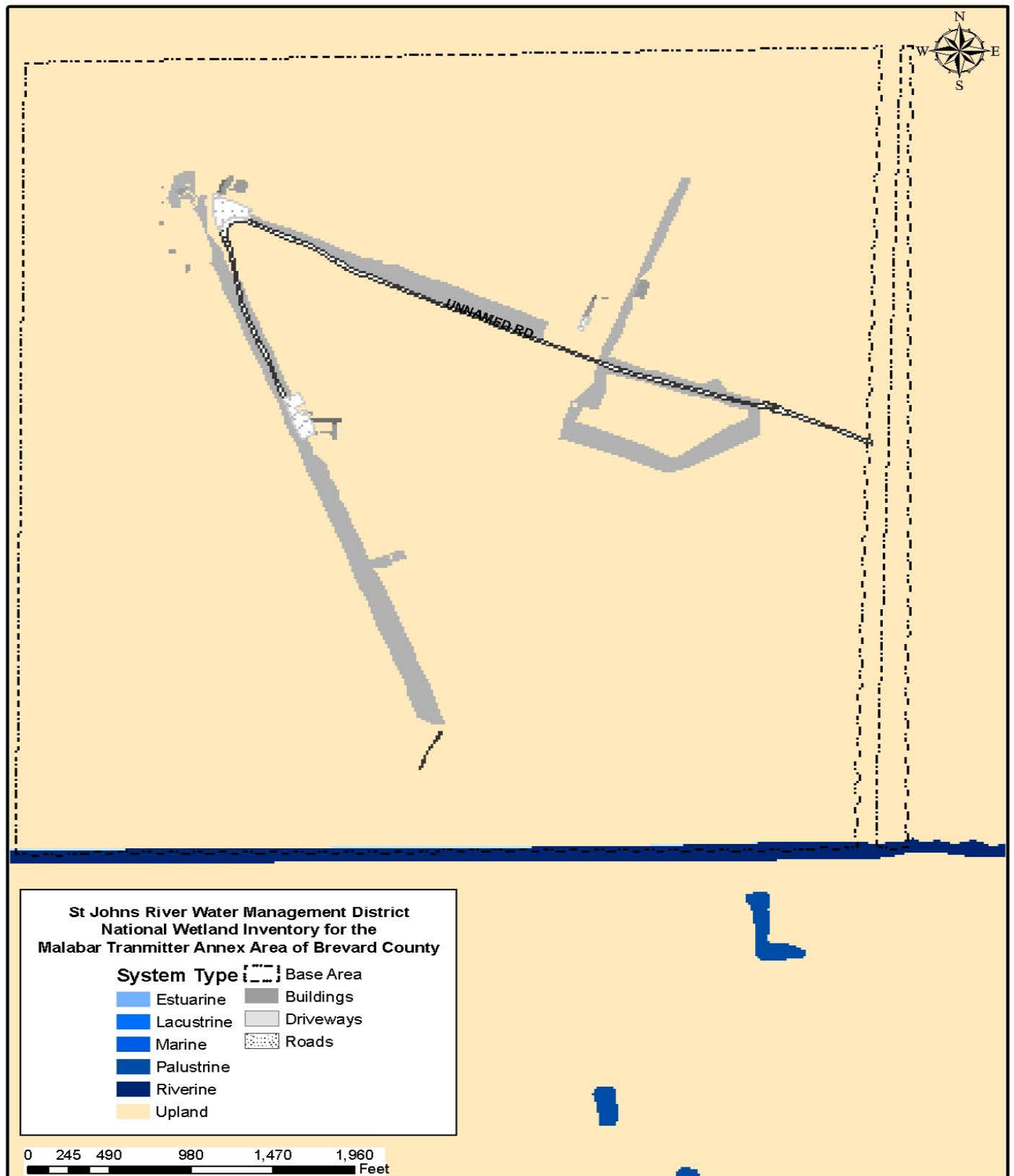


Figure 3-3: NWI for Malabar Transmitter Annex

3.1.3.4 Threatened, Endangered and Sensitive Species

Only one rare plant species has been observed on MTA. A small but healthy population of the epiphytic hand fern (*Cheiroglossa palmata*), State of Florida-endangered, grows on cabbage palms in three locations.

Several other unusual plant species have been observed on MTA. A small population of orchid crested coco (*Eulophia alata*) was found on the southeast side of the intersection of the northeast-southwest and north-south runways. The orchids are approximately 30 feet from the mowed edge in an "island" of mesic flatwoods with many cabbage palms.

There is no formally designated critical habitat under Section 4 of the ESA located on MTA. As stated earlier only one species of special concern, the gopher tortoise, has been documented on MTA.

Currently, one Federally-listed species is found at MTA, the Eastern indigo snake. The indigo snake has been identified on MTA through a shed skin only. The shed skin of an Eastern indigo suggests that a remnant population may exist at MTA, although biologists performing surveys have observed no individuals. MTA has suitable habitat preferred by indigo snakes and the presence of gopher tortoise burrows provides denning sites for individuals that may be present.

3.1.4 JDTMA

This property is located in the southern part of Jonathan Dickinson State Park. Wetlands and 100-year floodplains have not been identified on this site.

3.1.4.1 Invasive Species

Brazilian pepper tree is the only invasive species that has been formally identified on JDTMA. (Invasive Plant Species Control Plan for CCAFS, 2004) However, other exotic, potentially damaging species (e.g., cogon grass) have also been identified by 45 SW biologists.

3.1.4.2 Native Vegetation Communities and Wildlife

Most (about 80%) of the property is developed. The remaining 20% is comprised of scrub "islands" typical of the rosemary scrub habitat. Fauna on JDTMA consists of wildlife normally associated with scrub communities, including raccoons, opossums, and occasionally a white-tailed deer that is able to get inside the fence.

3.1.4.3 Threatened, Endangered, and Sensitive Species

Florida perforate cladonia (*Cladonia perforata*) is the only listed plant found on JDTMA (Federally- and State-endangered). This species is restricted to high, well-drained sands of rosemary scrub. The JDTMA population is part of a larger population at Jonathan Dickinson State Park, occurring in mature rosemary scrub. At JDTMA, the vegetation is mostly overgrown with a closed canopy of sand pines and palmettos, which excludes perforate cladonia. Therefore, the lichen is limited almost entirely to the maintained open areas at the fence line and perimeter with exceptions of two small areas near the road at the south side of the site. Recent security and tower projects

have resulted in relocation of the perforate cladonia from impacted areas to protected areas on Jonathan State Park grounds. A Biological Assessment was prepared and relocation measures were approved by USFWS (Vero Beach office) and Jonathan Dickinson State park personnel.

The threatened Florida scrub jay has been known to visit JDMTA, but has not been observed nesting within the Annex. Annex personnel have reported the presence of the gopher tortoise.

3.2 Geology, Soil and Water Resources

Physical resources of an area consist of the surface and subsurface soil and bedrock materials and their inherent properties, including geology and surface topography. Soils are typically described according to their complex types and physical characteristics. Discussions of geology include regional and site-specific geomorphic conditions and the general geological setting of an area.

Topography is the change of vertical relief (*i.e.*, elevation) over the surface of the area. The topography of an area is generally the product of natural influences (*i.e.*, erosion, seismic activity, climatic conditions, and the underlying geologic materials), but can be influenced by human activity. A discussion of topography typically includes a description of surface elevations, slope and distinct physiographic features (*i.e.*, mountains, ravines, and depressions).

3.2.1 CCAFS

3.2.1.1 Geology and Soil Resources

The topography of CCAFS consists of a series of relic dune ridges formed by wind and wave action, indicating that gradual beach deposits occurred throughout time. Higher naturally occurring elevations occur along the eastern portions of these areas, with a gentle slope to lower elevations toward the marshlands along the Banana River. Land surfaces are level to gently sloping with elevations that range from sea level to 15 feet above msl. For detailed information on the geology and soil resources of CCAFS, refer to the 2005 Land Clearing PEA.

The soil survey of Brevard County, Florida, 1974, identifies eleven different soil types within CCAFS with the three most prominent soils comprising the Canaveral-Palm Beach-Welaka association. It is about 37 percent Canaveral soils, 17 percent Palm Beach soils, nine percent Welaka soils and 37 percent soils of minor extent. This association is made up of nearly level and gently sloping ridges interspersed with narrow wet sloughs that generally parallel the ridges and extends the entire length of the County along the coast near the Atlantic Ocean. The most prevalent type of soil is Canaveral Peninsula. Canaveral soils are on moderately low ridges and consist of a mixture of light-colored quartz sand grains and multicolored shell fragments. The major soils in this area are moderately well drained to excessively drained and sandy throughout. The soils are exceptionally dry, even though the water table is often near the surface during rainy periods.

3.2.1.2 Water Resources

The surficial and Floridian aquifer systems underlie CCAFS. The approximately 70-foot-thick surficial aquifer system, generally comprised of sand and marl, is unconfined. The water table in the aquifer is generally a few feet below the ground surface. The surficial aquifer is recharged by infiltration of precipitation through the thin vadose zone.

Cape Canaveral AFS is within the Florida Middle East Coast Basin and situated on a barrier island that separates the Banana River from the Atlantic Ocean. This basin contains three major bodies of water: the Banana River immediately to the west, Mosquito Lagoon to the north, and farther west, the Indian River, separated from the Banana River by Merritt Island. All three water bodies are estuarine lagoons, with circulation provided mainly by wind-induced currents.

There are approximately 52 miles of drainage canals comprising 63 acres of surface waters on CCAFS. Canals were constructed by the USAF to provide drainage of low-lying areas. The major canals of this system have certainly altered the hydrology on CCAFS but now offer habitat for numerous species of fish and wildlife.

3.2.2 PAFB

3.2.2.1 Geology and Soil Resources

This Installation, like CCAFS to the north, is located on a barrier island. Barrier islands are linear islands of sand that parallel many gently sloping coastlines around the world (Johnson and Barbour, 1990). There is little topographic relief across PAFB, with elevations ranging from 0-6.1 meters above msl. The soil at PAFB is sandy to depths of 60 inches or more (USDA, 1974). Soil types and geology are similar to those found on CCAFS.

3.2.2.2 Water Resources

The major surface waters in the area are the Atlantic Ocean (which bounds PAFB on the east) and the Banana River (which bounds PAFB on the west). The water resources on PAFB include five man-made ponds totaling 31.3 acres. The Base also contains 4.1 miles of drainage ditches and 40.2 acres of canals. Most of the drainage ditches contain water throughout the year because they intersect the surficial aquifer. The canals are interconnected with the Banana River and are thus tidally influenced and brackish. Other than drainage ditches and stormwater retention ponds, there are no surface water resources located on the north or south housing areas.

The Installation is underlain by both confined and unconfined aquifers. The hydrologic units (aquifers) underlying PAFB include the surficial aquifer; semi-artesian and artesian aquifers within the Caloosahatchee Marl, Tamiami Limestone, and Hawthorn Group; and the artesian Floridian aquifer. The surficial aquifer underlying PAFB is the major hydrostratigraphic system that can be influenced by Base operations. This system, consisting primarily of marine sands, shell fragments, and coquina limestone, extends approximately 50 feet below sea level. The water table is generally within five feet of the ground surface. The surficial groundwater flows primarily toward the Banana River. Low-levels of contaminants (e.g., VOC, petroleum hydrocarbons, and heavy metals)

originating from PAFB IRP sites have been detected in surficial groundwaters at the Base.

Groundwater at PAFB occurs under unconfined (water table), semi-confined, and confined (artesian) conditions. The unconfined aquifer, composed of Holocene and Pleistocene age surficial deposits of marine sand, shell fragments, and sand conglomerate of the Anastasia Formation, is recharged by direct infiltration or rainfall. The generalized direction of groundwater flow in the surficial aquifer is westward, toward the Banana River. Localized flow in the surficial aquifer is from topographic highs (mounds, swells, dune ridges) toward surface water bodies (creeks, ponds, drainage canals).

3.2.3 MTA

3.2.3.1 Geology and Soil Resources

Land at MTA is generally level with very little natural undulations. Drainage ditches and swales with their associated spoil banks and a few soil stockpiles make up the majority of variations in topography at the Annex.

The Soil Survey of Brevard County, Florida, (USDA, 1974) identifies eight different soil types within MTA. Each individual soil type or soil association may display characteristics of the representative soil series. The soils identified at MTA include Eau Gallie sand; Eau Gallie Winder, and Felda soils; ponded Malabar, Holopaw and Pineda soils; Pineda sand; Quartzipsamments; smoothed Felda sand; Floridana sand; and Urban land.

Many areas are formed sloughs, marshes, or shallow ponds that have been filled with various soil materials to surrounding ground level or to elevations above natural ground level. Some areas were originally high ridges that have been excavated to below natural ground level and reworked. In a few places, soils have been reworked in place and not moved. These soils are poorly suited to most plants.

Geologic resources underlying MTA are similar to those previously described for CCAFS.

3.2.3.2 Water Resources

A network of swales and canals drain stormwater that ponds in low-lying areas of MTA. The existing runways are used for roads and none of the swales were constructed as stormwater management facilities. The soils at MTA are very permeable and the majority of stormwater that runs off the pavements percolate prior to reaching the nearest swale.

3.2.4 JDMTA

3.2.4.1 Geology and Soil Resources

Earlier in Florida's history, the sea level at JDMTA was much higher than at present and the coast was farther inland. Sand dunes formed along these ancient shorelines. These excessively well-drained relict dunes are the natural sites of the sand pine scrub

community. This community, with its deep, loose sand, is typically an aquifer recharge area.

The sands on the scrub ridges are mostly the St. Lucie Series (USDA, 1974). Other sands in the area are the Orsino Series and Satellite Variant.

Geologic resources underlying JDMTA are similar to those previously described for CCAFS with the addition of the limestones of the Tamiami Formation overlying the Hawthorne Formation and underlying the Caloosahatchie Formation.

3.2.4.2 Water Resources

There are no surface waters located in the immediate vicinity of the Annex.

3.3 Hazardous Materials and Hazardous Waste

Most towers contain electronic components, hardware and subassemblies, and generate little, if any, hazardous waste. However, Polychlorinated biphenyls (PCBs) may be found in the paint, transformers or light ballasts of older towers. In addition, heavy metal-containing paints were used on most of the older existing towers, and asbestos may be encountered at towers found on rooftops.

3.4 Health and Safety

There is electromagnetic radiation from several of the instrumentation antennae at JDMTA. However, all radiating equipment is operated in a safe manner so there is no radiation health hazard to site personnel or the public in the surrounding areas.

3.5 Land Use, Zoning, and Air Compatibility

The Federal Communications Commission (FCC) has been given the authority by Congress to require the painting and/or illumination of antenna towers when it determines that such towers may otherwise constitute a menace to air navigation. The FCC's rules governing antenna tower lighting and painting requirements are based upon the advisory recommendations of the FAA, which are set forth in two Federal Aviation Administration (FAA) Advisory Circulars, 47 CFR §§ 17.21-17.58. Although the FAA's lighting and painting standards are advisory in nature, the FCC's rules make the standards mandatory. The standards and specifications set forth in these FAA documents are incorporated by reference into the FCC's rules, making these advisory standards mandatory for antenna towers.

The FCC always requires an FAA determination that an antenna tower will not pose an aviation hazard before it will grant permission to build that antenna tower. Information required on the FCC construction permit form advises the FCC staff as to whether such a tower location or height is involved. The FAA's determination takes into consideration the location and height of the proposed tower, and its safety lighting and marking.

The Coastal Zone Management Act requires the preservation, protection, development, and restoration or enhancement of the nation's coastal zones. The Act also requires that all federally supported activities that directly affect coastal zones are consistent with approved state coastal management programs to the maximum extent possible.

Therefore, the USAF, as a federal landowner, is obligated to act responsibly and effectively in the use of natural resources under their control.

4.0 ENVIRONMENTAL CONSEQUENCES

This Chapter describes the potential environmental impacts associated with the activities under the Proposed Action and the No-Action Alternative. Components of the affected environment that are of greater concern are described in greater detail.

Federal, State, and local environmental laws and regulations were reviewed to assist in determining established thresholds for assessing environmental impacts (if any) in fulfillment of NEPA requirements. Proposed activities were evaluated to determine their potential to result in significant environmental consequences using an approach based on the interpretation of significance outlined in the CEQ regulations for implementing the procedural provisions of NEPA (40 CFR 1500-1508) and 32 CFR 989, *The Environmental Impact Analysis Process* (1995).

Guidelines established by the CEQ (40 CFR 1508.27) specify that significance should be determined in relationship to both context and intensity (severity). The assessment of potential impacts and the determination of their significance are based on the requirements in 40 CFR 1508.27. Three levels of impact can be identified:

- No Impact - No impact is predicted
- Not Significant Impact - An impact is predicted, but the impact does not meet the intensity/context significance criteria for the specific resource
- Significant Impact - An impact is predicted that meets the intensity/context significance criteria for the specific resource

Factors contributing to the intensity or severity of the impact include the following:

- The degree to which the action affects public health or safety;
- Unique characteristics of the geographic area such as proximity to cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas;
- The degree to which effects of the action on the quality of the human environment are likely to be highly uncertain or controversial;
- The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration
- Whether the action is related to other actions with individually insignificant, but cumulatively significant impacts;
- The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed or eligible for listing on the NRHP, or may cause loss or destruction of significant scientific or cultural resources;
- The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the ESA; and

- Whether the action threatens to violate a federal, state, or local law or requirements imposed for environmental protection.

Thresholds for determining impact significance are based on the applicable compliance standard. When feasible, these criteria correspond to federal- or state-recognized criteria, and are determined using the associated standardized methods. In the absence of a compliance standard, the thresholds are based upon a federal- or state-recommended guidance or follow professional standards/best professional judgment.

4.1 Biological Resources

The following regulatory requirements should be met to protect biological resources from any potential impacts:

Law or Rule	Permit/Action(s)	Requirement	Agency or Organization
AFI 32-7064	Integrated Natural Resources Management	Protect biodiversity on USAF lands including the protection of wetlands, listed species, cultural resources, air quality, water resources, etc.	USAF
AFI 32-7064	Assess Proposed Action to minimize impacts to wetlands	Manage USAF lands with the goal of no net loss of wetlands.	USAF
CWA	Section 404 dredge and fill permit*	Obtain permit from the USACE for any project activities resulting in the discharge of dredged or fill material into waters of the U.S., including wetlands.	USACE, in consultation with EPA; SJRWMD, and SFWMD
Endangered Species Act (ESA)	Consultation with U.S. Fish and Wildlife Service (USFWS) and Florida Fish and Wildlife Conservation Commission (FFWCC) and if necessary, obtain and comply with biological opinions/incidental take permits	Conserve ecosystems that support T&E species. Section 7 requires federal agencies to ensure that any action authorized, funded or carried out by them is not likely to jeopardize the continued existence of listed species or modify their critical habitat. Comply with existing T&E permits.	USFWS and FFWCC

Law or Rule	Permit/Action(s)	Requirement	Agency or Organization
Executive Orders (EOs) 11988 and 11990	Finding Of No Practicable Alternative (FONPA) if wetlands or floodplains would be impacted	Minimize the destruction, loss, or degradation of wetlands, and preserve and enhance the natural and beneficial values of wetlands. Reduce the risk of floodplain loss, minimize the impact of floods on human safety, health and welfare, and restore and preserve the natural and beneficial values served by floodplains. Consider alternatives to avoid adverse effects in the floodplains. If the only practicable alternative requires siting in a floodplain, design or modify Proposed Action to minimize potential harm to or within the floodplain	DoD
Florida Administrative Code 68A	Osprey Nest Removal Policies and Permit	Permits the take of inactive and active osprey nests.	FFWCC; USFWS
Florida Endangered Species Protection Act (ESPA)	Consultation with Florida Game and Fresh Water Fish Commission (FGFWFC)	Prohibits the intentional wounding or killing of any fish or wildlife species designated as "endangered", "threatened" or of "special concern" and intentional destruction of their nests.	FGFWFC
Florida Endangered and Threatened Species Act (FETSA)	Consider impacts to T&E species when planning and implementing projects	Establishes the conservation and wise management of T&E species as State policy.	FFWCC
Migratory Bird Treaty Act (MBTA)	Consultation with USFWS as necessary and compliance with applicable permits	Prohibits destruction of the eggs or nest of migratory birds without a permit.	USFWS
Preservation of Native Flora of Florida Act (PNFFA)	Avoid impacts to T&E and "commercially exploited" plants	Prohibits willfully destroying or harvesting T&E species and "commercially exploited" plants	Florida Department of Agriculture and Consumer Services (DOACS)
Various*	Environmental Resource Permit*	Obtain permit for any activity that could affect wetlands, alter surface water flows, or contribute to water pollution.	FDEP, SJRWMD and SFWMD

4.1.1 Proposed Action

The *45 SW Land Clearing Policy* and the *Programmatic Environmental Assessment for Land Clearing Activities* (2005) identify specific measures that should be taken to protect biological resources during land clearing activities such as clearing sites for the construction of new towers and the control of invasive species. Please refer to this document for a detailed discussion on potential impacts to biological resources from land clearing activities, and mitigation measures.

Potential impacts specific to tower-related construction, maintenance and demolition are discussed below.

Wildlife

Raptors and waterfowl appear to be less susceptible to collisions with towers or guy wires than other birds. Raptors are agile species with keen eyesight and are adept at avoiding tall structures. However, nest sites within 1.5 miles can be disturbed by construction-related noise and activity. By consulting with the 45 SW CEV, known nest sites and other critical habitat could be avoided during nesting and rearing seasons.

The retina of the bird's eye is far more sensitive to the red and infrared spectra than is the human eye. Color perception in birds is far more complex than in humans, as birds' eyes contain 4-6 types of cones (color receptors) while human eyes contain only 3 types. Light can affect birds' behavior both visually and magnetically. All bird species thus far examined have been shown to have a narrowly tuned receptor in the red region of the electromagnetic spectrum. Although research in this area is lacking, birds may be attracted to red lights or become disoriented by having red lights disrupt their magnetic compasses. Color (*i.e.*, white, white with ultraviolet, and specific colors such as red) and flash duration (*i.e.*, strobed, slow flash, or steady) are two aspects of lighting that can change its attraction for birds. A few reports indicate that white strobe lights, whose ultraviolet content is unknown, are less attractive to birds than steady or flashing red lights. (USFWS, 2004)

Long wavelength illumination, such as that in the red-orange spectrum, has been shown to interfere with the avian magnetic compass. However, current thinking seems to indicate that light flash duration, rather than color, is far more critical. The longer the "off" phase between the blink or flash phases of the light pulses, the less likely birds are to be attracted to the lighting. For example, solid or blinking red lights seem to attract birds on foggy, misty nights far more often than do white strobes, which may flash once every 2-3 seconds (3 seconds currently the maximum allowable "off" duration). Again, the "off" phase of the light seems critical, the longer that phase the less likely the attraction during foggy, misty, rainy, overcast, low-cloud-ceiling nights. (USFWS, 2004)

The potential for impact upon aquatic biota depends on the water hardness of a given resource. Previous documentation has shown that for ground planes located 1 ft beneath the ground surface, aquatic habitat within 300 ft would not be exposed to adverse levels of project-related copper unless the soil pH is below 6.5, the seasonally high water table was within 1.3 m of the surface, and the subsurface flow is directed toward the aquatic resource. If these conditions cannot be avoided, surface water concentrations for copper could exceed acceptable standards. In the unlikely circumstance in which areas with acidic soils, a high water table, and nearby aquatic resources cannot be avoided, an effective mitigation measure is to add lime to the soil to

raise its pH above 6.5. (Federal Highway Administration, 1998) This action would eliminate the potential for significant impacts to aquatic flora and fauna caused by the amount of copper released into the environment.

The construction activities related to new tower sites would displace habitat for common plant and animal species. Unless protected species inhabit the area, this common habitat displacement should not result in a significant biological impact.

Wetlands and Floodplains

EO 11990 directs that each agency (e.g., USAF) shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for (1) acquiring, managing, and disposing of Federal lands and facilities; and (2) providing Federally undertaken, financed, or assisted construction and improvements.

Wetlands and floodplains occur throughout the 45 SW properties, and could potentially be impacted by the Proposed Action. Wetlands will be avoided when selecting prospective sites for new tower construction, when feasible. Avoiding areas containing hydric soils will eliminate conflicts with suspected wetlands resources. New tower construction would be sited outside of the 100-year floodplain unless no reasonable alternative exists. If no alternative exists, the ground elevation for the proposed tower should be raised above the 100-year floodplain. Site specific NEPA documentation and a Finding of No Practicable Alternative (FONPA), if warranted, would be required for any new tower construction in a wetland or floodplain.

If avoidance for maintenance and/or demolition activities is not feasible, the impact would be rendered to an insignificant level by minimizing the affected area and performing mitigation measures identified during the USACE Section 404 permit process and Florida's ERP process. No significant impacts are anticipated to wetlands.

Endangered Species

The potential does exist for protected species to occur on proposed or existing tower sites. Least terns are considered a threatened species in Florida, and are protected under Section 7 of the Endangered Species Act of 1973 (as amended). Least terns are known to use gravel-covered roofs throughout the 45 SW. Some of these rooftops also host antennas that would be covered under the Proposed Action. There is also the potential for the Gopher Tortoise, Eastern Indigo Snakes, Southeastern Beach Mouse, and sea turtles to exist at or near tower locations.

Under the ESA, it is the responsibility of the 45 SW to determine whether actions authorized, funded, or otherwise carried out by those agencies may affect federally listed endangered, threatened, or proposed species. The USFWS recommends that each tower be assessed for its potential to affect federally listed species. The 45 SW consulted with USFWS on the Proposed Action. The USFWS has concurred that no adverse effect to species are likely, and therefore no further Section 7 consultation is necessary.

Specific requirements exist for reducing impacts to birds nesting on towers. Nests cannot be disturbed during nesting season, and personnel are encouraged to perform

maintenance outside of nesting season so that disturbance of nests is kept to a minimum. Removal of active nests is authorized outside of nesting season; however, a replacement platform is required unless one exists nearby or the tower is located in the airfield restriction zone. Removal of nests, eggs, or young is highly discouraged unless deemed an emergency. If these specific mitigation measures are followed, no significant impact should occur to migratory birds.

When activities are scheduled near tortoise habitat, but individual burrows would not be disturbed, natural resource personnel will stake off the area that must be avoided and provide tortoise informational posters. Although never observed, slow moving gopher tortoises could be run over by heavy equipment. Concerns regarding heavy equipment collapsing and entombing them inside of their burrows have been dismissed based on studies by the Florida Fish and Wildlife Conservation Commission (FFWCC) (Joan Berish, pers. comm.).

If activities are likely to disturb gopher tortoise burrows, qualified biologists would relocate tortoises to other suitable areas on CCAFS. Biologists would move tortoises no more than one to two days prior to clearing so that tortoises can be moved back close to their original area. All tortoise relocation will be completed in accordance with the Gopher Tortoise Relocation Permit (WR01103), issued to the AF. This permit, which was renewed 5 May 2004, allows natural resource managers to relocate up to 150 tortoises during a three-year period. Trapping is conducted by experienced personnel and in accordance with required State permits for these types of activities. Although rare, tortoises have been injured or killed during backhoe operations. If a tortoise is injured during relocation activities, it will transported immediately to a licensed local wildlife rehabilitator or veterinarian experienced in treating injured tortoises. If injured or killed, the FFWCC would be immediately notified. Tortoises held overnight will be kept isolated from one another to prevent the spread of Upper Respiratory Tract Disease. Blood sampling will be conducted by experienced biologists and in accordance with FFWCC guidelines. Animals will be handled briefly and gently to reduce harm or stress to the animal. The AF is required to submit a report for each relocation project.

Most indigo snakes leave construction areas once activities begin and any encountered are to be left alone and permitted to leave on their own. The only time indigo snakes may be relocated is during relocation of gopher tortoises. In accordance with the AF Gopher Tortoise Relocation Permit, no more than one indigo snake encountered may be relocated. Should additional specimens of this species be encountered, the capture operation is suspended and the FFWCC office in Tallahassee contacted for instructions.

Tower activities may result in the direct "take" of Southeastern Beach Mice that may be found within the Proposed Action areas as a result of habitat loss. However, the effects of the Proposed Action are not anticipated to jeopardize the continued existence of the Southeastern Beach Mouse.

Studies have shown that light pollution has the potential to impact sea turtles. Female sea turtles go ashore to dig nests in the sand and lay eggs. When bright artificial light is present, females may avoid going to shore altogether, or they may become disoriented. Tower lighting can be the source of this occurrence.

Sea turtle hatchlings, which almost invariably hatch at night, instinctively head toward light. Due to light pollution, hatchlings often head towards the light and away from the

sea. This disorientation may expose the hatchlings to predation or other accidental death. To minimize the impacts to sea turtles from the tower lighting, red strobe lights should be used on towers visible from the beach.

There are some types or categories of communications projects that the USFWS assumes would have no effect on federal-listed species or other resources under jurisdiction of the USFWS. Therefore, there is no requirement to consult the USFWS or complete a "Tower Site Evaluation Form" for these types of actions, as listed below:

- Projects that do not involve new construction activities or soil disturbance.
- Construction of new towers or the placement of antennae assemblies that is co-located with an existing structure (tower, building, water tank, smokestack, etc., but not a small building in otherwise undisturbed habitat).
- Routine maintenance of existing tower sites, such as painting, antenna or panel replacement, upgrading of existing equipment, etc.
- Repair or replacement of existing towers and/or equipment, provided such activities do not significantly increase the existing tower mass and height, require the addition of guy wires, or increase the size or location of the existing pad site or equipment shelter.

The ESA requires a Federal permit for removal or reduction to possession of endangered plants from areas under Federal jurisdiction, or for any act that would remove, cut, dig up, or damage or destroy any such species. Furthermore, Chapter 7 of AFI 32-7064, *Integrated Natural Resources Management*, requires the AF to protect State-listed endangered, threatened, or rare species, when possible. The 45SW recognizes the importance of listed and rare species and would make all practical attempts to protect and conserve these species and their habitats.

Migratory Birds

The MBTA makes it illegal to "pursue, hunt, take, capture, kill, or attempt to take, capture, or kill, possess," migratory birds, parts of their bodies, or their eggs or nests. EO 13186, signed in 2001, requires federal agencies to protect migratory birds and their habitats. Natural resource managers performing migratory bird nest/egg removal are permitted under federal Fish and Wildlife Depredation Permit MB841530-0. Transportation of live birds or eggs would be conducted in a manner that reduces harm or stress to the animal or egg involved.

Collisions with towers or their guy wires may result in bird mortality. While birds have been killed from strikes on shorter, 100-ft tall towers, historically the majority of bird mortality incidences are associated with towers over 300 ft in height. The construction of new towers could create a potential impact on migratory birds. Migrating birds may collide with guy wires during inclement weather, which reduces visibility or may cause the birds to fly lower than normal. Wire strikes also occur when the tower structure separates feeding, nesting, and roosting areas. Therefore, daily avian foraging routes are important elements to consider when siting new towers.

Maintenance of existing towers also may have an impact on migratory birds. CCAFS has a large population of ospreys, and these birds have historically nested on boresight

towers, utility poles, antennas, and gantries throughout CCAFS. In some instances, it may be necessary to destroy some nests so the facility can provide critical mission support. The osprey is Federally protected by the MBTA, which makes it illegal to destroy a nest without the proper permits. Permits to remove active nests are denied unless the problem posed by the nest is deemed severe and is well documented. Normally, only inactive nests may be destroyed.

A pilot project started in 1988 to install alternative nesting and roosting sites for ospreys. Two osprey nesting platforms constructed from disused utility poles, pallets and chain-link fencing were erected close to facilities historically used as nesting sites. In 1997, the CCAFS Environmental Office initiated actions to have four osprey nesting platforms built to replace the antenna structures used by the birds in the antenna field located just east of the Range Operations Control Center (ROCC). The nests built on the antennas became a problem when the antennas were due for maintenance. Maintenance of these antennas requires dismantling, which in turn would destroy any nests located on the structures. The platforms were placed on 105-foot concrete poles directly adjacent to the inactive nests. Once in place, the inactive nests were moved to the platform to encourage nesting at the new location. Currently, three of these original platforms support active osprey nests. An additional 37 platforms were installed in 1999/2000 with a current occupancy rate of 43 percent.

To minimize impacts to wildlife, new towers should not be located in wetlands and riparian areas when possible. Wetlands and riparian areas are high priority fish and wildlife habitat, serving as important sources of food, cover, and shelter for numerous species of resident and migratory wildlife. Waterfowl and other migratory birds use wetlands and riparian corridors as stopover, feeding, and nesting areas. Migratory birds tend to concentrate in or near wetlands and riparian areas and use these areas as migratory flyways or corridors, which could potentially exacerbate the documented problem of birds being killed by flying into and striking the communications towers. If unavoidable wetland impacts would occur after every effort has been made to avoid such impacts, the appropriate U.S. Army Corps of Engineers office should be contacted to determine if a permit is necessary prior to commencement of construction activities.

In order to minimize impacts to migrating birds, the U.S. Fish and Wildlife and Service provides several recommendations. While there are no provisions in the Migratory Bird Treaty Act that allow for the unauthorized take of migratory birds, USFWS recognizes that some birds may be killed at towers even when all recommendations are implemented. Although absolution from liability under the MBTA is not possible, USFWS Division of Law Enforcement and the Department of Justice have used enforcement and prosecutorial discretion when companies/individuals have made efforts to avoid the unauthorized take of migratory birds.

The following recommendations are provided by the USFWS, and are based on the best information available. These are the most prudent and effective measures for avoiding bird strikes at towers, and should provide significant protection for migratory birds.

1. Communication equipment should be collocated with an existing tower or other structure (e.g., billboard, water tower, etc.) when feasible.

2. If collocation is not feasible and a new tower or towers are to be constructed, communications service providers are strongly encouraged to construct towers no more than 199 feet above ground level (AGL), using construction techniques which do not require guy wires (e.g., a lattice structure, monopole, etc.). Such towers should be unlighted if Federal Aviation Administration regulations permit.
3. If constructing multiple towers, providers should consider the cumulative impacts of all of those towers to migratory birds and threatened and endangered species as well as the impacts of each individual tower.
4. If at all possible, new towers should be sited within existing “antenna farms” (clusters of towers). Towers should not be sited in or near wetlands, other known bird concentration areas (e.g., state or Federal refuges, staging areas, rookeries), in known migratory or daily movement flyways, or in habitat of threatened or endangered species. Towers should not be sited in areas with a high incidence of fog, mist, and low ceilings.
5. If taller (more than 199 feet AGL) towers requiring lights for aviation safety must be constructed, the minimum amount of pilot warning and obstruction avoidance lighting required by the FAA should be used. Unless otherwise required by the FAA, only white (preferable) or red strobe lights should be used at night, and these should be the minimum number, minimum intensity, and minimum number of flashes per minute (longest duration between flashes) allowable by the FAA. The use of solid red or pulsating red warning lights at night should be avoided. Current research indicates that solid or pulsating (beacon) red lights attract night-migrating birds at a much higher rate than white strobe lights. Red strobe lights have not yet been studied.
6. Tower designs using guy wires for support that are proposed to be located in known raptor or waterbird concentration areas or daily movement routes, or in major diurnal migratory bird movement routes or stopover sites, should have daytime visual markers on the wires to prevent collisions by these diurnally moving species.
7. Towers and appendant facilities should be sited, designed and constructed so as to avoid or minimize habitat loss within and adjacent to the tower “footprint”. However, a larger tower footprint is preferable to the use of guy wires in construction. Road access and fencing should be minimized to reduce or prevent habitat fragmentation and disturbance, and to reduce above ground obstacles to birds in flight.
8. If significant numbers of breeding, feeding, or roosting birds are known to habitually use the proposed tower construction area, relocation to an alternate site should be recommended. If this is not an option, seasonal restrictions on construction may be advisable in order to avoid disturbance during periods of high bird activity.
9. In order to reduce the number of towers needed in the future, new towers should be designed to structurally and electrically accommodate known antenna requirements and comparable antennas for at least two additional

uses, unless the design would require the addition of lights or guy wires to an otherwise unlighted and/or unguyed tower.

10. Security lighting for on-ground facilities and equipment should be down-shielded to keep light within the boundaries of the site.
11. If a tower is constructed or proposed for constructions, coordination with USFWS is advised to evaluate the site for bird use, conduct dead-bird searches, to place net catchments below the towers but above the ground, and to place radar, GPS, infrared, thermal imagery, and acoustical monitoring equipment as necessary to assess and verify bird movements and to gain information on the impacts of various tower sizes, configurations, and lighting systems.
12. Towers no longer in use or determined to be obsolete should be removed within 12 months of cessation of use.

4.1.2 No Action Alternative

Under the No Action Alternative, towers would not be constructed, existing towers would not be maintained, and excess towers would not be removed. No significant impact to biological resources would be anticipated as a result of the No Action Alternative.

4.2 Geology, Soil and Water Resources

The following regulatory requirements should be met to protect geology, soil, and water resources from any potential impacts:

Law or Rule	Permit/Action(s)	Requirement	Agency or Organization
Clean Water Act (CWA)	Section 401 Water Quality Certification*	FDEP review of CWA Section 404 dredge and fill permit applications submitted to the U.S. Army Corps of Engineers (USACE) to certify that project will not cause or contribute to a violation of Florida water quality standards.	FDEP
CWA	Section 402 National Pollutant Discharge Elimination System (NPDES) storm water construction permit	Obtain permit for the discharge of storm water for projects disturbing one (1) acre or more that has the potential to impact surface waters, except when the silviculture exemption applies.	EPA; FDEP; South Florida Water Management District (SFWMD), St. John's River Water Management District (SJRWMD)

Law or Rule	Permit/Action(s)	Requirement	Agency or Organization
CWA	Section 404 dredge and fill permit*	Obtain permit from the USACE for any project activities resulting in the discharge of dredged or fill material into waters of the U.S., including wetlands.	USACE, in consultation with EPA; SJRWMD, and SFWMD
Safe Drinking Water Act	National Primary and Secondary Drinking Water Regulations	Maintain health-based standards for drinking water to protect against both naturally-occurring and man-made contaminants that may be found in drinking water	EPA; FDEP
Various*	Environmental Resource Permit*	Obtain permit for any activity that could affect wetlands, alter surface water flows, or contribute to water pollution.	FDEP, SJRWMD and SFWMD

4.2.1 Proposed Action

The potential for erosion is highest during tower construction and demolition. Ground-clearing activities would be anticipated at new tower construction sites, and would be in accordance with the 45 SW *Land Clearing Policy* (2004). Minimal ground disturbance would be anticipated for tower maintenance activities. Because towers are generally located on relatively level terrain and only small areas of soil would be disturbed, no significant impact is anticipated. To reduce the impacts of erosion, standard best management practices would be used. These measures include the use of silt fences, mulch, siltation basins, and revegetation of disturbed areas to control short-term erosion. Water resources could potentially be affected by the Proposed Action activities if soil erosion occurs from the land clearing and grading during construction. However, these impacts would not be significant. No impacts would be anticipated to geology.

Site specific work plans must be developed prior to any water tower maintenance activities. If the towers must be drained to perform the maintenance, the following considerations must be addressed:

1. The water cannot be discharged directly to any surface waters.
2. Dechlorination is strongly recommended prior to discharge and direct chlorine feeds should be halted to allow dechlorination to occur before discharging.
3. Because some chlorine residual may persist, the water should be discharged to the land, preferably in a nearby swale that is not directly connected to surface water.
4. Temporary beams may be established to contain the water and allow it to percolate or configured in a manor that will slow down sheet flow and allow any residual chlorine to dissipate.
5. Care should be taken to minimize any erosion to nearby areas.

Elevated water tanks are considered part of the drinking water system. If maintenance requires disassembling any pipes or if the interior of the tank needs to be repaired, all work must be overseen by a registered Florida Professional Engineer (PE). Routine maintenance on the outside of the pipes or elevated tanks does not require oversight by the PE. There would also be a requirement for a confined space entry permit if any interior work to the elevated water tank is performed.

There exists the potential for copper from the grounding conductors to leach over time into the soil or to the nearest surface water or groundwater. The potential for copper contamination depends on the rate of corrosion, the extent of leaching into the soil, and the distance for transport of copper via groundwater flow to the nearest water resource. Previous studies have found that the rate of copper addition from a single ground plane to nonacidic, unsaturated soil would normally be less than 10 pounds per year and less than one pound per acre. The maximum rate of copper added to soil is estimated at 4.75 pounds per acre per year. (Federal Highway Administration, 1998) This amount would not be expected to have adverse effects on water resources or on terrestrial or aquatic ecosystems. In the unlikely event that copper exceeds acceptable standards, the site would be evaluated to determine the extent of contamination, and remediation activities would be developed through the Installation Restoration Program.

Upon decommissioning, the USAF would evaluate the tower sites and, if required, would restore the site should any environmental impacts from copper leaching be documented.

4.2.2 No Action Alternative

Under the No Action Alternative, the potential for groundwater contamination would still exist. However, no significant impacts are anticipated.

4.3 Hazardous Materials and Hazardous Waste

4.3.1 Proposed Action

Environmental Baseline Surveys (EBSs) are prepared for potential tower sites, as required. The EBS indicates any significant amount of hazardous materials or environmental contamination existing on the property prior to tower construction.

Heavy metal based paint may be encountered on existing towers. If the heavy metal based paint is fully sealed within an acceptable paint, no paint removal is necessary. However, if the paint on the tower is flaking off, there is a potential for soil and water contamination from the peeling paint. Therefore, the tower would need to be stripped.

Stripping must be done in such a way that the chips and/or paint dust doesn't escape. The surrounding area must be covered to prevent the dust from contacting the soil and/or water. Workers must wear appropriate personal protection equipment. The paint removed must be disposed as a hazardous waste.

Polychlorinated biphenyls may be found in the paint, transformers or light ballasts of older towers. Most towers contain electronic components, hardware and subassemblies, and generate little, if any, hazardous waste. Upon decommissioning, the towers would be dismantled and turned into the Defense Reutilization and Marketing

Office for disposal. Some of the components may need to be treated as hazardous waste. No significant impacts are anticipated from the hazardous materials and hazardous waste potentially encountered.

During construction activities for new towers and maintenance activities for existing towers, small amounts of hazardous or regulated materials such as petroleum fuels, paints, solvents and cleaners, sealants, herbicides and pesticides, would be used. No significant impacts are anticipated.

Due to the use of pure copper cables as grounding conductors, it is possible that some of the copper may have corroded during the years since its installation. If so, it is possible that the level of copper in soil or groundwater at tower locations may have reached an action level of regulatory significance. Refer to Section 4.2.1 for more information on these potential impacts.

4.3.2 No Action Alternative

No significant impacts to hazardous materials and waste would occur from the No Action Alternative since no changes would occur. However, if towers were not maintained, heavy metal based paint could chip and contaminate soil and water. Also, potential groundwater contamination could occur from corroded copper cables.

4.4 Health and Safety

4.4.1 Proposed Action

Heavy metal based paint is known to exist on most of the current towers, and asbestos may be encountered on rooftops that host antennae or buildings that provide a power supply to towers. When ingested and inhaled in excessive amounts, heavy metals can affect the liver, brain and lungs, although each metal causes its own characteristic symptoms. The Occupational Safety and Health Administration (OSHA) has established regulations controlling occupational exposures to inorganic lead and other heavy metal compounds. Contractors would adhere to these regulations, as applicable, when performing tower-related activities to prevent exposure to heavy metals that exceed the permissible limits:

29 CFR 1926.62:	Occupational Safety and Health Administration (OSHA), Lead in Construction, Final Rule
29 CFR 1910.1025:	Occupational Safety and Health Administration (OSHA), Occupational Exposure to Lead, Final Rule
29 CFR 1910.1027:	Occupational Safety and Health Administration (OSHA), Occupational Exposure to Cadmium
29 CFR 1910.1000:	Occupational Safety and Health Administration (OSHA), Table Z-1-A, Permissible Exposure Limits

There is electromagnetic radiation from several of the instrumentation antennas. However, all radiating equipment is operated such that there is no radiation health

hazard to site personnel or the public in the surrounding areas. It is also unlikely that anyone would suffer electric shock or burns from exposure to the electric fields.

Common safety hazards associated with tower construction, maintenance, and decommissioning activities would exist. All appropriate regulations, including Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1926, *Safety and Health Regulations for Construction*, would be followed during project activities, including Part 550, *Interim Inspection Procedures During Communication Tower Construction Activities*. Less than significant impacts are anticipated to health and safety from the Proposed Action.

4.4.2 No Action Alternative

No significant impacts to health and safety would occur from the No Action Alternative since no changes would occur.

4.5 Land Use, Zoning, and Air Compatibility

4.5.1 Proposed Action

New communications equipment should be collocated on existing communications towers or other structures when feasible. If collocation is not possible and new towers are to be constructed, towers should be constructed in existing "antenna farms," and no more than 199 feet above ground level using techniques that do not require guy wires (e.g., a lattice structure, monopole, etc.) Such towers should be unlighted if FAA regulations permit to reduce impacts to migratory birds. Towers should not be sighted in or near wetlands or other known bird concentration areas, in known migratory or daily movement flyways, or in habitat of threatened or endangered species. Towers should not be sited in areas with a high incidence of fog, mist, and low ceilings.

If towers taller than 199 feet above ground level are constructed, the minimum amount of pilot warning and obstruction lighting required by the FAA should be used. Unless otherwise required by the FAA, only white (preferable) or red strobe lights should be used at night, and these should be the minimum number, minimum intensity, and minimum number of flashes per minute allowable by the FAA. The use of solid red or pulsating red warning lights at night should be avoided because they attract night-migrating birds at much higher rates than white strobe lights. If a tower is near an airport, or in the airport's flight path, lighting and coloring requirements may apply for tower's less than 200 feet.

Each new or altered antenna tower structure registered must conform to the FAA's painting and lighting recommendations set forth on the structure's FAA determination of "no hazard," and must be cleared with the FAA and filed with the FCC. The FCC has been given the authority by Congress to require the painting and/or illumination of antenna towers when it determines that such towers may otherwise constitute a menace to air navigation. The FCC's rules governing antenna tower lighting and painting requirements are based upon the advisory recommendations of the FAA, which are set forth in two FAA Advisory Circulars, 47 CFR §§ 17.21-17.58. Although the FAA's lighting and painting standards are advisory in nature, the FCC's rules make the standards mandatory. The standards and specifications set forth in these FAA documents are

incorporated by reference into the FCC's rules, making these advisory standards mandatory for antenna towers.

The FCC always requires an FAA determination that an antenna tower will not pose an aviation hazard before it will grant permission to build that antenna tower. Information required on the FCC construction permit form advises the FCC staff as to whether such a tower location or height is involved. The FAA's determination takes into consideration the location and height of the proposed tower, and its safety lighting and marking.

Where the FAA approves the substitution of high intensity white lights for a combination of red lights and painting, and the antenna tower is located in a residential neighborhood, the Commission requires the applicant to prepare an environmental assessment. 47 CFR § 1.1307(a)(8). The Commission, upon review of the environmental assessment, may determine that the proposed substitution of high intensity white lights would not have a significant impact, and may process the application without further review.

The Coastal Zone Management Act requires the preservation, protection, development, and restoration or enhancement of the nation's coastal zones. The Act also requires that all federally supported activities that directly affect coastal zones are consistent with approved state coastal management programs to the maximum extent possible. Therefore, the USAF, as a federal landowner, is obligated to act responsibly and effectively in the use of natural resources under their control. Prior to any new tower construction, the Coastal Zone Management Plan should be reviewed to determine consistency with the plan. Any conflicts with the goals and objectives of the plan should be avoided. The Proposed Action is essential to the mission of the 45 SW, and less than significant impacts are anticipated to land use and zoning from the Proposed Action. No cumulative impacts to land use and zoning would be anticipated.

4.5.2 No Action Alternative

No significant impacts to land use, zoning, and air compatibility would occur from the No Action Alternative.

4.6 Conflicts with Federal, State, or Local Land Use Plans, Policies, and Controls

The Proposed Action would have no impact on existing land use itself and presents no conflicts with Federal, regional, state, or local land use plans, policies, or controls.

4.7 Energy Requirements and Conservation Potential

Existing energy sources are considered adequate to meet the requirements of the Proposed Action.

4.8 Natural or Depletable Resource Requirements and Conservation Potential

Other than the use of vehicle fuels for construction activities, the Proposed Action requires no significant use of natural or depletable resources.

4.9 Adverse Environmental Effects that Cannot be Avoided

Adverse environmental effects that cannot be avoided include construction-related emissions of fugitive dust and exhaust products; temporary displacement of wildlife during construction due to noise and construction activities; some destruction of existing vegetation; and some sediment runoff into surrounding areas during construction activities. However, through implementation of the program actions and mitigation measures described within this document, these effects can be minimized.

4.10 Relationship Between Short-Term Uses of the Human Environment and the Maintenance and Enhancement of Long-Term Productivity

The Proposed Action would eliminate unneeded tower structures on 45 SW property, and would construct and maintain towers required to meet the 45 SW mission. The Proposed Action would be undertaken in accordance with the *CCAFS General Plan* (USAF, 2002) that provides a management tool to aid in making operational support decisions by incorporating the concept of comprehensive planning.

4.11 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

The Proposed Action would not substantially affect human health or the environment and would not exclude persons from participation, deny persons the benefits, or subject persons to discrimination because of their race, color, or national origin.

4.12 Cumulative Impacts Summary

In order to minimize cumulative impacts to migrating birds from tower strikes, the recommendations USFWS should be implemented. No other cumulative impacts were identified for the Proposed Alternative or No Action Alternative when combined with other actions.

5.0 Conclusion

Table 5-1 provides environmental siting criteria and consultation and recommended mitigation measures that will aid in the selection of new tower sites.

Table 5-1: Environmental Siting Criteria and Consultation/Mitigation Requirements

Resource	Environmental Siting Criteria	Consultation and/or Mitigation
Air Quality	None	Use Best Management Practices for dust emissions
Soils	Avoid unstable slopes and highly erodible or eroded soils	Apply standard erosion control measures
Water Resources	Avoid areas with seasonally high ground water and acidic soils, or set back copper ground plane >300 ft from surface water	Apply lime to acidic soil; evaluate conditions at decommissioning
Biological Resources	Avoid habitat for threatened and endangered species	Consulted with USFWS. No adverse effect likely to occur.
Biological Resources	Avoid critical avian habitats and vicinity within major flyways	Mark tower, guy wires and overhead power lines
Biological Resources	Avoid Federal-jurisdictional wetlands	Obtain USACE dredge and fill permit and/or compensate for loss of wetlands
Biological Resources	Avoid the 100-year floodplain	Raise facilities above 100-year flood level or flood-proof facilities
Cultural Resources	Avoid siting on properties listed or eligible for listing on the NRHP	Consult with SHPO
Land Use	Avoid conflicts with approved state and local Coastal Zone Management Plans	Alter facility design to reduce or eliminate potential conflict
Noise	None	Limit construction to normal working hours and shut off equipment when not in use

6.0 DOCUMENTATION CITED

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- Endangered Species Act, 1973. Pub. L. No.93-205, 81 Stat. 884 (Dec. 28, 1973) (current version at 16 USC. 1531-1543 (1982)).
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- USAF, 1998. *45th Space Wing, Patrick Air Force Base Florida, Bird Hazard Reduction Plan, Operations Plan 91-212, 45 SW OPLAN 91-212*, January 1.
- USDA, 1974. *Soil Survey of Brevard County, Florida*. United States Department of Agriculture (USDA) Soil Conservation Service in cooperation with the University of Florida Agricultural Experiment Stations.
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USEPA, 1971. Noise from Construction Equipment and Operations, Building Equipment,
and Home Appliances, NJID, 300 1, December 31, 1971.

7.0 LIST OF PREPARERS

Larry W. Blackwell
Director, Environmental Programs
M.A., Human Relations, Louisiana Tech University, 1988
BFA, Advertising, Louisiana Tech University, 1971

Vincent P. Greenwade
Network Administrator
A.A., General Studies, Brevard Community College, 1999

Michael J. Landers
Senior Environmental Scientist
B.S., Environmental Science, Washington State University, 1995

Susan Pearsall
Senior Ecologist
M.S., Biology, University of Alabama in Huntsville, 1999
B.S., Zoology, Auburn University, 1993

Daniel Phillips
Program Manager
B.S., Forest Management, Purdue University, 1984

Jeffery H. Scott, Ph.D.
Senior Fish and Wildlife Biologist
Ph.D., Aquatic Ecology/Limnology, Auburn University, 1990
M.S., Biology, Jacksonville State University, 1982
B.S., Biology, Jacksonville State University, 1977

APPENDIX A

**REQUEST FOR ENVIRONMENTAL
IMPACT ANALYSIS**

AIR FORCE FORM 813

REQUEST FOR ENVIRONMENTAL IMPACT ANALYSIS

Report Control Symbol
RCS: SXHT 03-7265

INSTRUCTIONS: Section I to be completed by Proponent; Sections II and III to be completed by Environmental Planning Function. Continue on separate sheets as necessary. Reference appropriate item number(s).

SECTION I - PROPONENT INFORMATION

1. TO (Environmental Planning Function) 45 CES/CEV	2. FROM (Proponent organization and functional address symbol) 45 CES/CEVP	2a. TELEPHONE NO. 853-6822
3. TITLE OF PROPOSED ACTION Construction, Maintenance and Demolition of Communications, Wind and Camera Towers, 45 Space Wing		
4. PURPOSE AND NEED FOR ACTION (Identify decisions to be made and need date) The purpose of the action is to construct, maintain and demolish various types of towers at 45 Space Wing properties. Repairs and modifications are required for a variety of towers in order to maintain proper (Cont. on page 2)		
5. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES (DOPAA) (Provide sufficient details for evaluation of the total action.) For maintenance of towers, work would include a range of work from corrosion control to lightning protection. Some towers will be installed with new masts air terminals, down conductors, bonding clamps, (Cont. on page 2)		
6. PROPONENT APPROVAL (Name and Grade) Angy Chambers, GS-11	6a. SIGNATURE //Signed//	6b. DATE 20040803

SECTION II - PRELIMINARY ENVIRONMENTAL SURVEY. (Check appropriate box and describe potential environmental effects including cumulative effects.) (+ = positive effect; 0 = no effect; - = adverse effect; U = unknown effect)

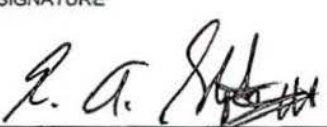
	+	0	-	U
7. AIR INSTALLATION COMPATIBLE USE ZONE/LAND USE (Noise, accident potential, encroachment, etc.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. AIR QUALITY (Emissions, attainment status, state implementation plan, etc.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. WATER RESOURCES (Quality, quantity, source, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10. SAFETY AND OCCUPATIONAL HEALTH (Asbestos/radiation/chemical exposure, explosives safety quantity-distance, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. HAZARDOUS MATERIALS/WASTE (Use/storage/generation, solid waste, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12. BIOLOGICAL RESOURCES (Wetlands/floodplains, flora, fauna, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
13. CULTURAL RESOURCES (Native American burial sites, archaeological, historical, etc.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. GEOLOGY AND SOILS (Topography, minerals, geothermal, Installation Restoration Program, seismicity, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15. SOCIOECONOMIC (Employment/population projections, school and local fiscal impacts, etc.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. OTHER (Potential impacts not addressed above.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SECTION III - ENVIRONMENTAL ANALYSIS DETERMINATION

17. ☐ PROPOSED ACTION QUALIFIES FOR CATEGORICAL EXCLUSION (CATEX) # ; OR
☒ PROPOSED ACTION DOES NOT QUALIFY FOR A CATEX; FURTHER ENVIRONMENTAL ANALYSIS IS REQUIRED.

18. REMARKS
R² 8/9/04 RS 8/13/04

See page 2.

19. ENVIRONMENTAL PLANNING FUNCTION CERTIFICATION (Name and Grade) E. ALEXANDER STOKES III, REM, GS-14 Chief, Environmental Flight	19a. SIGNATURE 	19b. DATE 8/16/04
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Page 2
SXHT 03-7265

4. Purpose and Need for Action (cont.)

working condition. New towers are occasionally required for a variety of uses and old towers are normally demolished if being replaced or are no longer required.

5. Description of Proposed Action and Alternatives (cont.)

and grounding rods. Some may need replacement of guy grounding systems and foundations that may require excavation, backfill, welding etc. Repair or replacement of aircraft warning lights systems may also be conducted. Stripping, washing, priming and repainting may also be necessary for some towers. The attached 5-Year Tower Inspection and Maintenance Program Approach Plan contains a list of existing towers involved in the maintenance program.

Construction and/or demolition of towers would occur periodically and could include installation of grounding and lightning protection, aviation warning lighting system, 120VAC general lighting system and power receptacles and cable tray systems. New guy wire foundations could be installed and small associated facilities could be required to house electrical equipment used to support the tower.

ALTERNATIVES:


No Action – Lack of repairs would prevent the towers from working properly which would impede the 45th Space Wing mission. The ability to retrieve data from these assorted towers that support security, safety, environmental monitoring etc. would be eliminated. New towers are required to support various mission requirements.

Alternatives would exist on where new antennas could be constructed. Those alternatives would need to be discussed on a case by case basis.

18. Remarks

Numerous environmental resources could be potentially impacted by construction, maintenance or demolition of towers. Maintenance and demolition could involve asbestos, lead-based paint, solid and hazardous waste, impacts to migratory bird nests, etc. Construction of new towers could involve natural resources, soils, wetlands, etc.

The proposed project has the potential to adversely impact CCAFS environmental attributes and does not qualify for a Categorical Exclusion (CATEX), as defined in 32 CFR 989, Appendix B. Therefore, further environmental analysis is required (e.g., Environmental Assessment or Environmental Impact Statement).

alc 
3-Aug-04

APPENDIX B

AGENCY CONSULTATION LETTERS

From: AnnMarie_Maharaj@fws.gov

Sent: Tuesday, April 05, 2005 4:23 PM

To: Chambers Angy L GS-11 45 CE/CEVP

Subject: Review of the Draft Programmatic Environmental Assessment for
the Construction, Maintenance and Demolition of Wind, Communication,
Water, and Camera Towers at the 45th Space Wing

Log Number: 05-885

Dear Ms. Chambers:

The Fish and Wildlife Service has no comments on the Draft Programmatic Environmental Assessment for the Construction, Maintenance and Demolition of Wind, Communication, Water, and Camera Towers at the 45th Space Wing, received on March 9, 2005.

We look forward to reviewing future projects for CCAFS. If you have any further questions please contact me at (904) 232-2580 ext. 111.

Sincerely,
Ann Marie Maharaj



Jeb Bush
Governor

Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Colleen M. Castille
Secretary

August 26, 2005

Ms. Angy L. Chambers
Department of the Air Force
45 CES/CEV
1224 Jupiter Street, MS 9125
Patrick AFB, FL 32925-3343

RE: Department of the Air Force – Final Draft Environmental Assessment for the Construction, Maintenance, and Demolition of Communications, Wind, Water, and Camera Towers at the 45th Space Wing – Brevard and Martin Counties, Florida.
SAI # FL200508251464C

Dear Ms. Chambers:

Florida State Clearinghouse staff, pursuant to Presidential Executive Order 12372, Gubernatorial Executive Order 95-359, the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended, and the National Environmental Policy Act, 42 U.S.C. §§ 4321, 4331-4335, 4341-4347, as amended, has reviewed the referenced final draft environmental assessment (EA).

The Department (DEP) concurs with the U.S. Air Force's finding of no significant impact and requests that the Air Force consult with DEP's Central and Southeast District Water Facilities staff on all water tower construction and maintenance activities. In addition, please continue to coordinate with the Florida Fish and Wildlife Conservation Commission regarding minimization of impacts to listed species and migratory birds during tower construction and maintenance activities.

Based on the information contained in the final draft EA, the state has determined that the proposed federal activities are consistent with the Florida Coastal Management Program.

Thank you for the opportunity to review the subject document. If you have any questions regarding this letter, please contact Ms. Lauren P. Milligan at (850) 245-2170.

Sincerely,

Sally B. Mann, Director
Office of Intergovernmental Programs

SBM/lm

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